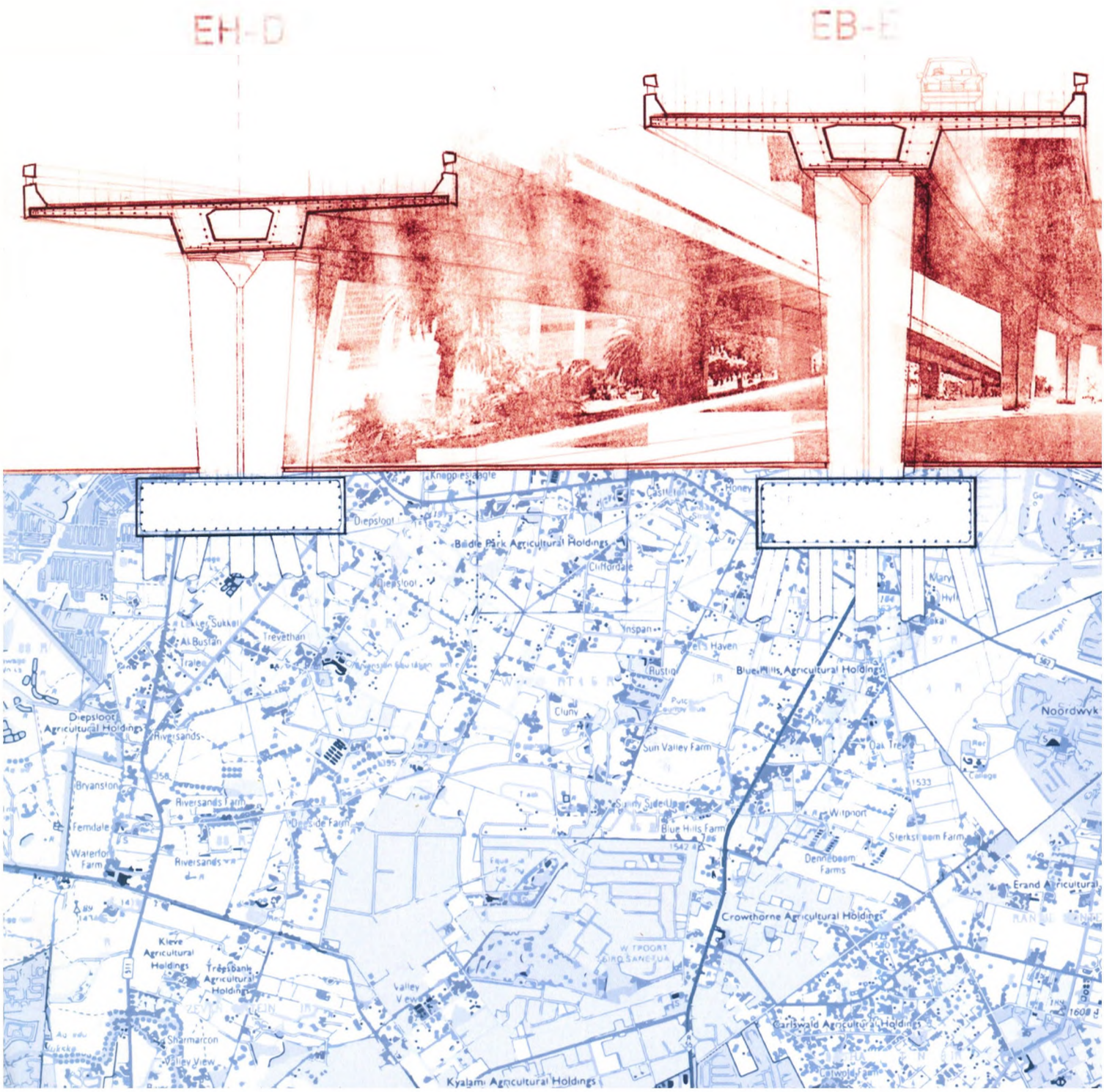
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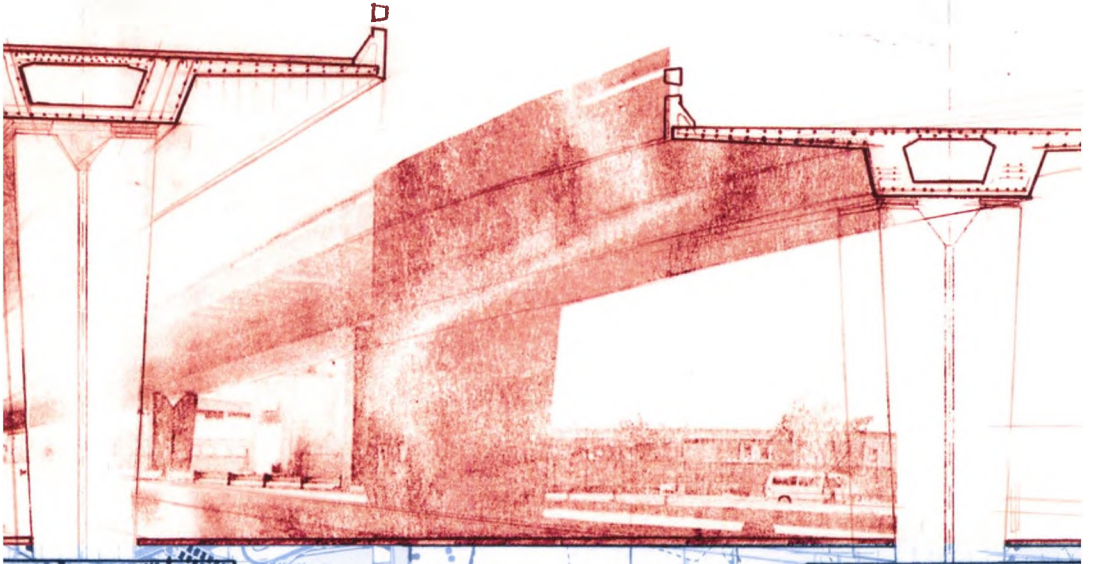
EB-E
Diepsloot
Beldie Park Agricultural Holdings
Cliffordale
Trevethan
Inspan
Rustic
Blue Hills Agricultural Holdings
Diepsloot Agricultural Holdings
Riversands
Sun Valley Farm
Noordwyk
Bryanston
Riversands Farm
Blue Hills Farm
Waterfo Farm
Witpoort
Sterkstroom Farm
Dennedoorn Farms
Erand Agricultural
Crowthorne Agricultural Holdings
Kleve Agricultural Holdings
Tréfsbank Agricultural Holdings
Valley View
Sharmarcon
Carlswald Agricultural Holdings
Kyalami Agricultural Holdings



HALFWAY HOUSE

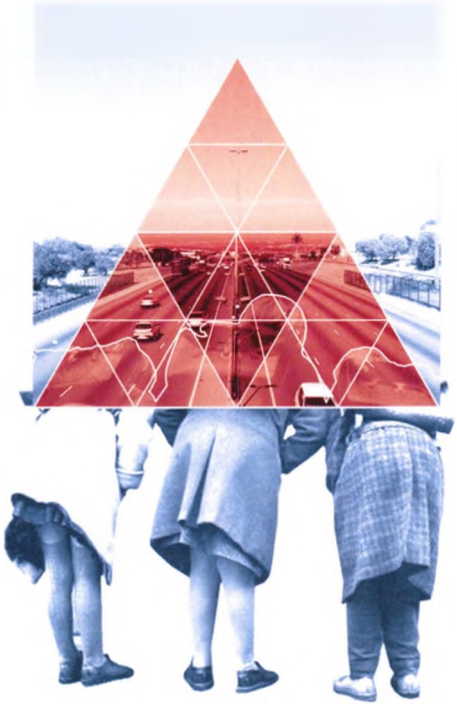
RE-FORMING A PLACE OF INTERCHANGE

VERSITY OF THE WITWATERSRAND
OF ARCHITECTURE AND PLANNING

AARON FACTOR, 376402

SUPERVISORS: HILTON JUDIN & KIRSTEN DOERMANN

To my mother

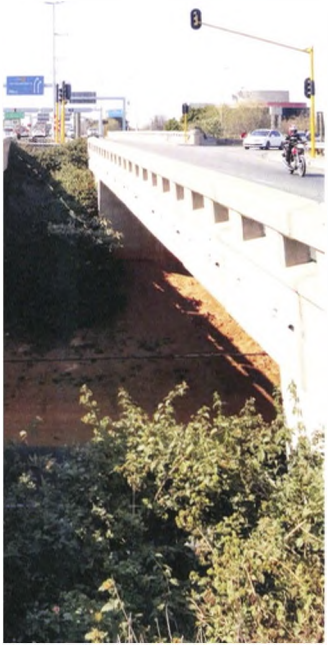


Declaration

I, Aaron Factor (student number - 376402) am a student registered for the course ARPL 7003 in the year 2015. I hereby declare the following:

I am aware that plagiarism is wrong. I confirm that the work submitted for assessment for the above course is my own unaided work except where I have stated explicitly otherwise. I have followed the required conventions in referencing thoughts, ideas, and visual materials of others. I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my unaided work or that I have failed to acknowledge the source of the ideas or words in my own work.

Aaron Factor
28 January 2016



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ABSTRACT

FIG. 1A.03

To Kirsten Doermann. Thank you for helping me connect the dots over the first half of the year. This was a time where I approached you with a new thesis topic every week, you instilled confidence in me, motivating me to explore each one as far as possible.

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To my brother, Daniel Factor. Thank you for putting up with the succession of early morning alarms. Your ongoing support means the world to me.

To my father, Tony Factor. Your legacy lives on, inspiring me in all that I do. Thank you giving me the opportunity to be able to fulfil my 20 year academic journey, culminating in this thesis document.

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Lastly, thank you to all those who contributed to my education throughout the 5 year journey at the WITS School of Architecture and Planning. I have had the pleasure to learn from so many talented staff members and students. I appreciate you all.

PREFACE

FIG. 1A.04

A question prevails: in a world submersed in the discourse of supermodernity, how does architecture factor in the human condition? This thesis provides an opportunity of reflective pause and a moment in time to consider the complexity of human relatedness and fundamental needs. If unmet, architecture contributes to the creation of non-places, and fosters politics of socio-political disparity.

This dissertation utilizes a context comprising of a highway interchange in Halfway House, Midrand. Representative of transit architecture, this area marks the sole east-west corridor across the north-south dominated landscape. A manifestation of non-place, an urban void, a space for temporary movement and consumption. Paths of varying origins and destinations cross anonymously, independent of the other. Within this context, the landscape has been manipulated to facilitate a contemporary urban lifestyle. Time is compressed, consumption dictates and the motor vehicle, with all its detritus, dominates the public realm.

This current infrastructural conundrum creates a buffer between diverse strata, fostering a fragmentation and disconnect between urban speed and the pedestrian. What arises is a lost and hostile landscape, with little other than areas forming negative spaces in between. Despite the vacuity of this context, these spaces hold a full pedestrian life. Yet mobility has become burdensome, pace has become stagnant, quality of life impaired, and integrity of being severely diminished.

The author argues that architecture has a responsibility to recover a sense of place; that is to accommodate the human condition comprising at minimum - basic human needs and interpersonal relatedness. This dissertation reveals how responsive architecture has the capacity to address the fragmentation of landscape and life, through the construction of a connective architectural intervention.

Captured through the lens of a camera, the needs of anonymous pedestrians are revealed, and the author builds a narrative rooted in the actual area, rather than imposed from outside.

Replacing a roadside bridge diner, a pedestrian transportation interchange and concourse is offered, a gathering place where multiple pathways intersect. Creating a lasting place and a building bound in meaning and time, the pedestrian is made visible. Seeking to bridge the divided public realm, the architecture forms a meaningful place of access across a harsh urban terrain.


VESI

Halfway house
n. [haf-wey.hous]

1. an inn or stopping place situated approximately midway between two places
2. a centre designed to facilitate the readjustment to private life
3. a compromise: a halfway house between fixed and floating exchange rates
4. an area: the historic name of the midway point between Johannesburg and Pretoria from which Midrand developed

Interchange
n/v. [in.ter.cheynj]

1. to give and receive mutually; exchange
1. to change places or cause to change places; alternate; switch
2. a motorway junction of interconnecting roads and bridges
3. a place where passengers are exchanged between between transport modes

Concourse
n. [kon.kawrs]

1. the act of coming, moving, or flowing together
2. an assemblage; gathering: a concourse of people
3. A broad thoroughfare
4. a large open space for accommodating crowds, as in a transit terminal

PART B

TRANSITIONAL LANDSCAPES

FIG. 1B.01

01
THEORY

b. **Transitional Landscapes**

i. Beyond the Edge:
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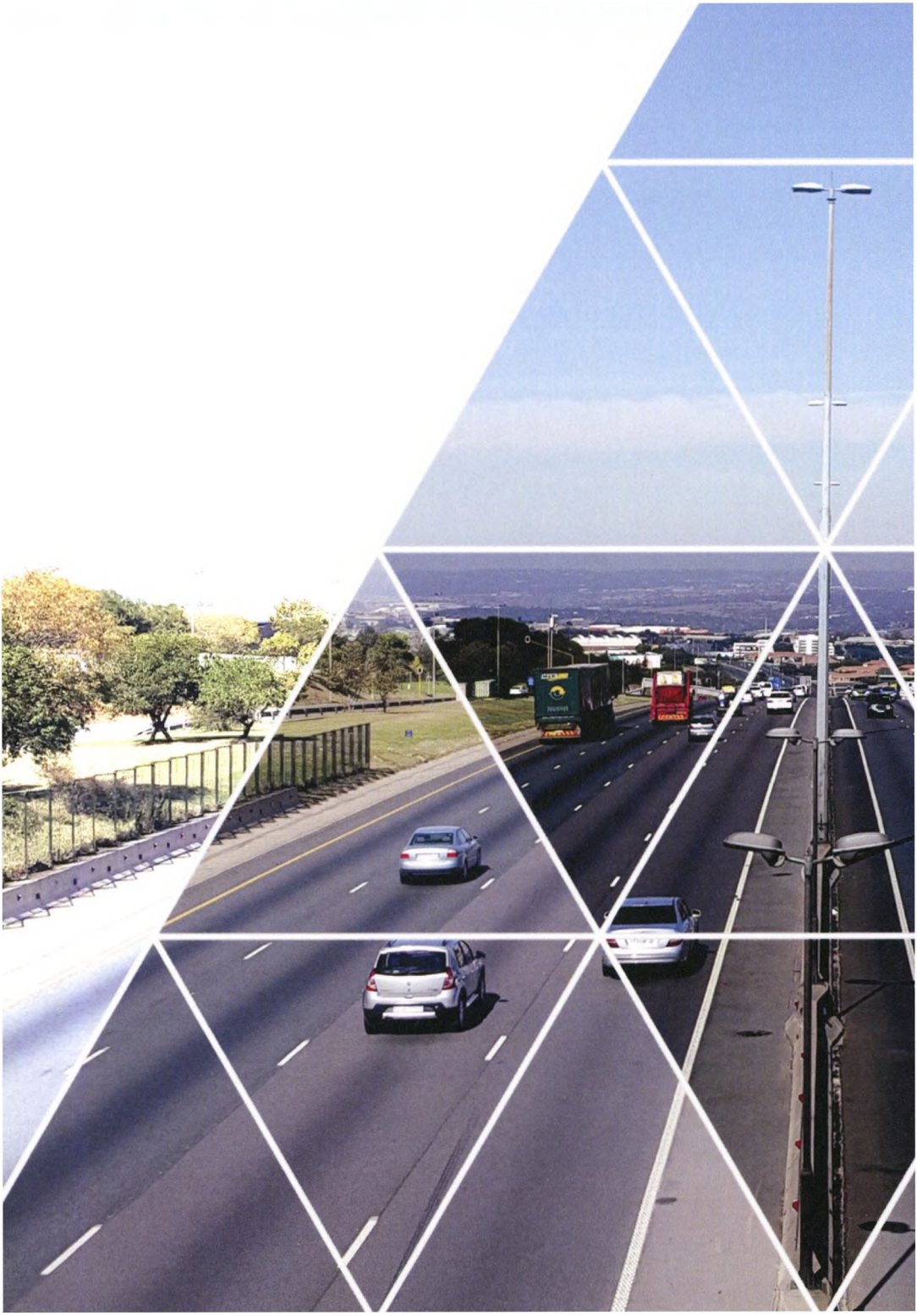
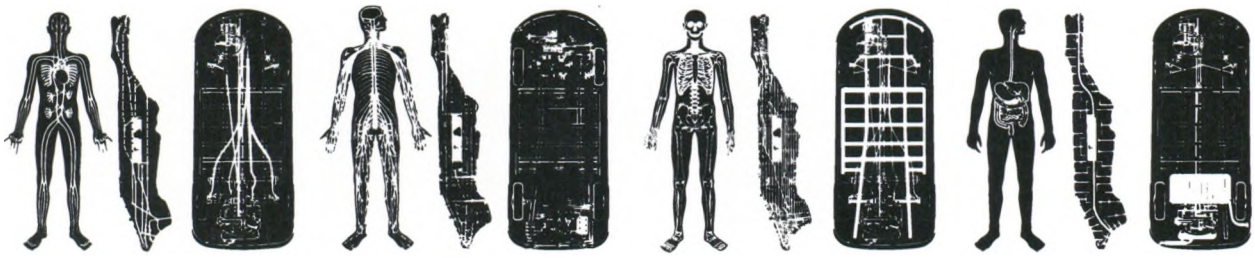


ı of place that is oppressing the development of place identity. This ɔer investigates alternatives to current practices that reduce place to t attempts to understand the role of human experience and situational place making. Encapsulating the essence of place encourages enhanced or creating place identity and understanding the importance of recovering 'place' is crucial in transforming edge cities from consumable space ıd lasting places.

Reformed Geometry

Tracing Gauteng's arteries from Midrand's Jozi Diner restaurant

FIG. 1B.02



Car Culture

Oswald Mathias Ungers' illusion portraying man's interdependent relationship with the city and the mechanism that drives it

FIG. 1B.03

OBJECTIVE OF THE RESEARCH

This research paper centers on a number of associated theories of place and the phenomena of urban change. The paper explores theories of place with specific focus on "sense of place".

The author's research looks at recent developments in the contemporary urban landscape through the phenomenon of the edge city. Through examining a local maturing edge city it is possible to understand its present context in relation to its past and potential future. Further, by analyzing the institutions that determine change in our edge cities and assessing public perception, we can gauge their potential in fostering a sense of place.

It is the intention of this research paper to examine theoretical approaches to the concepts of place. By considering a multitude of sub-fields, including urban, social, cultural, and economical aspects, this paper integrates subjective and humanistic principles in search of understanding the phenomena of edge cities and sense of place. Through investigating the evidence from Midrand, a local model edge city, it is hoped that the research paper will explore possibilities of uncovering place.

AN INTRODUCTION TO PLACE: CLASSIFYING THE EDGE CITY

As today's urban landscape continues to sprawl further out from the city center, new urban centers appear on the periphery. Each center is unique, characterized by regional differences, era of progression, and particular geographical context. Furthermore, these new centers share a multitude of features from their birth due to the dominant automobile-based transportation system, economic drive, and social and lifestyle models.

While the phenomenon existed decades prior, it was only until the early 1990s that these new outlying urban centers were coined as "edge cities" (Garreau 1991). In his book, Edge City: Life on the New Frontier (1991), Joel Garreau set about analyzing and defining these new areas within the landscape. This newly defined concept of 'Edge City' catalyzed debate and popularized discourse on the phenomenon of suburban downtowns while the vast majority of architects and planners were focusing on the revitalization of traditional downtowns.

The edge city is a place of rapid transformation and development. Garreau understands them as signifying an urban revolution that has initiated "the biggest change in a hundred years in how we build cities" (Garreau 1991, p. 3). Additionally, Garreau states that they embody "new hearths of our civilization". He therefore foresees an impact on society in an equally radical light, whereby this new urban fabric is defined as comprising of "multiple urban cores" sited along the metropolitan fringe.

The edge city arose within the landscape because proximity and accessibility became an after-thought to the isolation of suburban life. Commercial opportunities also sprung up within large tracts of available land. Subsequently, rapid urbanization and the distraction of distance from the city center led to the emergence of large-scale office parks. According to Garreau (1991), the edge city is the new frontier, places with over-scaled retail complexes and glistening new office towers located near major highways.

The edge city has developed into a significant reflection of modern Western society. It signifies a sale of urban areas

as product, a space of mass consumerism. Most edge cities globally share a common face. As developers stake out the optimum use of their land, designs look inward rather than considering the holistic fit. Since types of buildings are often selected on profitability and prestige, developers often select to build shopping malls and office towers. These self-fulfilling approaches are defined both in terms of aesthetics and functionality. Therefore the space between the built fabric is the cause of many issues facing the contemporary edge city (Ford, 2000).

The automobile functions as a principal shaper of form in the edge city. The road networks take precedent as developers configure how to move employees, potential customers and services to and from their buildings. Along contemporary streets, transportation corridors are intentionally designed not to be walkable or livable, and instead are intended for efficient vehicular movement (Appleyard, 1964). Furthermore, edge city streetscapes are not oriented for circulatory transit, but solely intended to shift automobiles off the road and into the parking lot.

Since the majority of society work and shop in the edge city, there is little interest in placing meaning and value in this context. It is the invested corporations that manage the edge city, rather than concerned communities. This has resulted in many edge cities looking at new ways to redesign the spaces between existing buildings, and re-evaluating the siting of new buildings and their respective pedestrian connectivity networks. Even though these fixes are geared to enhance the edge city's functionally, it is the author's opinion that there should be a stronger emphasis in making these places more meaningful to society.

Architects often speak of 'creating a sense of place' and creating 'place identity' through design. However, the author argues that invariably there seems to be an absence of meaning that is underpinned by the following: The architect's relationship with place is frequently a temporary one; with the restricted attitude: "build it and they will come". In addition, people's interpretation of 'place identity' is subjectively informed.

The author shall proceed with this paper by linking the various ways academics and practitioners constitute a sense of place, and construct strategies to regain this sense of place through understanding various types of experience.

THE STUDY OF PLACE

There are a multitude of definitions concerning a sense of place owing to the variations in language and objectives between architects, urban planners, and other concerned academics. Hence, the paper seeks to combine several approaches to uncover the common threads and to explore the potentials in uncovering a 'sense of place' in relation to the phenomenon of the edge city.

One cannot measure place, rather it exists at a countless amount of spatial scales. Different spatial scales are unified by the people who shape, experience, and identify place at each point. Since it is people that are the agents of place, it is the people that attribute subjective meaning to locations.

Place is an essential concept to humanity, but it is a characteristically an elusive one. The term "place" is part of our everyday language. However, for architects the term signifies a more philosophical meaning. An awareness

Genius Loci
Realigning man and 'sense of place'

FIG. 1B.04

in geographical theories regarding 'place' appeared in the early 1970s. At the forefront of this debate were two pioneering figures, Edward Relph and Yi-Fu Tuan. They led the way in a new direction for the study of 'place' that diverted from the objective limits of geography, reintroducing the human dimension.

Relph and Tuan share related humanistic perspectives, exploring place with a phenomenological approach, however they are divided by discrete differences. Both geographers understand people as agents of place and that it is essentially people that denote meaning to place. For Relph and Tuan, place had additional significance than simply to represent locations in the world; for them it was a concept that signified a state of 'being in the world'. This concept of place merges people and place together, signifying an integral relationship that exists between them. Tuan understands place through the "emotional attachments" and the "psychological essences" of human perception and attitudes towards place (Relph 1976, p. 16). Conversely, Relph engages place subject to direct human involvement through conscious intent or moral force.

THE VALUE OF PLACE IN SPACE

Place, space, and landscapes represent very similar terminology. As we carry out our daily lives we do not always acknowledge place as we once did. Rather, we transcend spaces increasingly rapidly with our landscapes tending to be less vernacular and more synthetic than those of the past. As with 'place', both 'space' and 'landscape' are terms we tend to frequently use that have numerous connotations. However, when we pause to reflect on our context past and present, we begin to relate these terms with our experiences past and present. Relph's breakthrough book, Place and Placelessness (1976), studies the connection between human experience and by analyzing the essence of place, he begins to define the elements which characterize places as unique.

Edward Relph's understanding of place is bound to phenomenology, the movement instigated by the philosophical writing of Edmund Husserl's in the early 1900s. This approach is founded on a process of inquiry based on the principle that reality occurs in the human conscious. The approach further explores how society perceives objects and events through psychological perceptions. Place and Placelessness was a reaction to the perception of geography of the time. This approach aimed to demonstrate how geography was removed from the reality of the lived world. Hence, man, nature, and space became subjects for inquiry. Relph advocated a deeper understanding of human experience in terms of place. He looked: "to explore place as a phenomenon of the geography of the lived-world of our everyday experiences" (Relph 1976, p. 6).

In terms of the hierarchy of space, the principal role of the human being is clear. In the routine of daily life, each individual is aware of the multiple layers of these spaces. Relph describes: "the meaning of space, and particularly lived space, comes from the existential and perceptual places of immediate experience" (Relph 1976, p.28). Hence, if space is a context, when one embeds meaning, 'space' transforms into 'place'.

Similarly, Yi-Fu Tuan puts forward that it is in 'places' that we begin to understand the world. In *Space and Place* (1977), he imagines space as being further abstracted than place.

For Tuan space is a mode of mobility while places are pauses. The concepts "space" and "place" are defined by an interdependence of one another. It is only from the refuge of place that we are conscious of the exposed risk of space. Furthermore, if we understand space as a vessel for movement, then place is pause. Furthermore, it can be understood that pause in movement is the catalytic transformer of location to place (Tuan 1977, p. 6). It is in the pauses that we come to truly understand places and begin to value them. This manifests itself as we strengthen our routine encounters with the objects, paths and landscapes that contain space. Places are born through the course of unconscious discovery. It is through understanding them that we start to understand the world. Tuan links space with mobility and risk, and place with refuge and pause while understanding the contextual importance of time.

In contemporary urban environments such as the edge city and suburbia, the importance of time is minor due these environments being formed by the present. Locating a rooted suburb or edge city community is doubtful. Rather, the elements of a place embody its character, a central quality of identity. Character encompasses more than simply image. It is influenced by the design intention; sense of security and communal cohesion. In addition, places demand regular and meaningful contact. As Tuan proposes, places are pause. It is this pause that allows contact; encourages social cohesion and allows greater exposure to cultural activity. Frequent and profound interaction by individual experience gives place significance and a sense of being everlasting.

The author proposes that contemporary places should encourage a sense of place and past by not simply emphasizing the length of existence, but instead focusing on the quality of experience.

SPATIAL FRAMEWORK

This paper utilizes Midrand, Johannesburg, as a case study, to analyzes the form, function, and role of edge cities in a contemporary South African society. To do this, the paper analyzes national relevance to this phenomenon by considering Apartheid planning as a possible enabler of the edge city. Secondly the author shall outline his reasons for choosing Midrand as the focus for the paper by defining its location, understanding related terminology and qualifying Midrand as an Edge City by using Joel Garrau's five rules (Garreau 1991, pp. 6-7). Next, the paper will analyze the power of "imagibility" concerning the experience of an edge city. Additionally, the paper shall discuss the influence of history and authenticity in determining a sense of place regarding edge cities. The paper penultimately highlights the critical roles played by edge cities in a contemporary South African landscape. Finally, the paper shall conclude by outlining the steps that can be taken in order recover a sense of place in the edge city.

120km/h Architecture

Unresponsive built environment which borders the Ben Schoeman Highway

FIG. 1B.05

WHY MIDRAND?

APARTHEID PLANNING AS AN ENABLER OF THE EDGE CITY

South Africa's primary urban centres feature highly irregular density sprawl. This is a devastating consequence of Apartheid planning, where oppressed population groups were forced out of the city. Racial exclusion has resulted in the country's urban centers developing into edgeless cities, a new pattern of urban phenomena (Robert Lang, 2003).

DEFINING LOCATION AND TERMINOLOGY

It is the author's opinion that the edge city becomes the natural, binding space between edgeless city formations. Under Apartheid rule, Pretoria and Johannesburg expanded significantly as forced removal operations began to shift the urban structure. Historically, Louis Botha Avenue/Old Pretoria Main Road, served as the primary arterial connecting the mining town of Johannesburg to the administrative centre of Pretoria 50km away. However, today municipal extensions mean that these two prominent cities are merely divided by a hypothetical border where a concrete boundary does not exist. In 1968 the Ben Schoeman Freeway was opened. Running parallel to Louis Botha Avenue, it formed a new high-speed arterial. Named after then minister of transport who oversaw its construction, it was seen as the biggest enabler of the country's economy since the discovery of gold eighty years prior. It forms part of the N1, which marks the first section of the famed Cape to Cairo Pan-African Highway, an imperial dream envisioned by the British Empire.

This paper further examines Midrand, South Africa's foremost matured edge city. With 'Rand' meaning 'edge' in colonial Dutch, the name translates to 'centre of the edges.' Midrand occupies the central connecting space in the Gauteng province, between Johannesburg's north rand of Sandton and Pretoria's south-lying area, Centurion. Midrand rapidly suburbanized in the late 1970s. It was established as a municipality in 1981, in the aptly name area known as Halfway House - a strip of land caught in between Old Pretoria Road and the N1.

Garreau outlines five guidelines for a place to be defined as an edge city (Garreau 1991, pp. 6-7): over five million square feet of rentable office space; over six thousand square feet of rentable retail space; more work oriented than residential; is perceived by the public as one unified place and has gone through recent and rapid development.

Midrand certainly has more than the five million square feet of rentable

Approaching the Edge

Ben Schoeman Highway as one passes under Johannesburg's ring road (N3 Bypass) towards Pretoria

FIG. 1B.06

office space (eclipsing that of downtown Johannesburg); over-scaled shopping centers undeniably act as the public space that service the area; the population drastically rises in the morning and drops by the afternoon (thus completely dependent on the city's road network); has entertainment, retail and recreation spaces and is branded and functions as a 'one-stop shop'. Finally, Midrand has transformed from farmland to an urbanized business district through recent and rapid economic growth and suburbanization.

It was just few decades ago that the site was rural farmland, before being targeted for regional shopping malls and office-park complexes. Currently, it is one of many major business hubs in South Africa and has extensive office developments, a wealth of retail venues, and an ever-changing skyline. Midrand was incorporated into the Johannesburg Metropolitan Municipality in 2000, after rapid development along the lines of a model 'edge city'. Thus, Midrand is a good fit with the objectives of this research because it is an edge city that is currently facing many of the common problems that plague edge cities in general.

IMAGE AND EXPERIENCE

The research paper will now examine the power of "imagibility" concerning the marketed experience of an edge city. One cannot ignore the influence that image and experience hold when analyzing the character of edge cities. Midrand is no different, relying heavily on marketing a manufactured experience. This is especially evident with the contrived imagery and language used by developers to attract prospective clientele to their various commercial and residential projects. A prime example of this is Midrand's elite Waterfall Estate development - the Century Property Development company's "has it all" residential, commercial, and industrial project, attracting those who seek a manufactured lifestyle.

As an edge city, place is a fundamental commodity. For investors in Midrand, its continued success is crucial. This is the underlying reason behind the emphasis on marketing and image. However, the complex matter of inducing a 'sense of place' is just as important. Critics claim that edge cities are simply placeless centers for specialized activity. This relates to an international trend of the contemporary landscape.

Ray Oldenburg's *The Great Good Place* (1989) identifies an absence in American informal public life. His book highlights a loss of the key casual

Colonial Colossus

Caricature of Cecil Rhodes, after he announced plans for a pan-African highway from Cape Town to Cairo

FIG. 1B.07

sites of public life that are central to the prosperity of successful cities. Oldenburg claims that a new movement in American social life arose with the construction of automobile suburbs set up by returning World War II soldiers. Their intention was to shape a new form of community, however, instead they inhibited community development and isolated the individual. Oldenburg (1989), proposed that although "...proclaimed as offering the best of both rural and urban life, the automobile suburb had the effect of fragmenting the individual's world" (Oldenburg 1989, p.4). This modification in the contemporary urban landscape has forced the individual's daily routine to revolve around the poles of home and work. This links specifically to the site chosen in that it is a key interchange linking Johannesburg and Pretoria and therefore a common space shared by commuters traveling to and from work.

Oldenburg regards our households as "private compounds" into which society has retreated. He suggests that society believes them to be only option in which to house informal social life. The character of informal public life does not simply exist in the public spaces decided by formal planning. Instead, true informal public life is interconnected with the courses of society's daily commute. It is through the spaces we collide, that community becomes incidental.

Place, as shared space, can only be explained by referring to its connected phenomena. It has no regional constraints or tangible classification. Instead, place occurs in "imagined communities" (Anderson 1991, p.42). Daily routine dictates that one shares space with other individuals, and across a uniform landscape we all have subjective understandings of place. Though people exist in the same place, they go about their everyday routine without truly knowing their fellow individuals in these shared spaces. Nevertheless, in the perception of all individuals subsists a vision of sharing place.

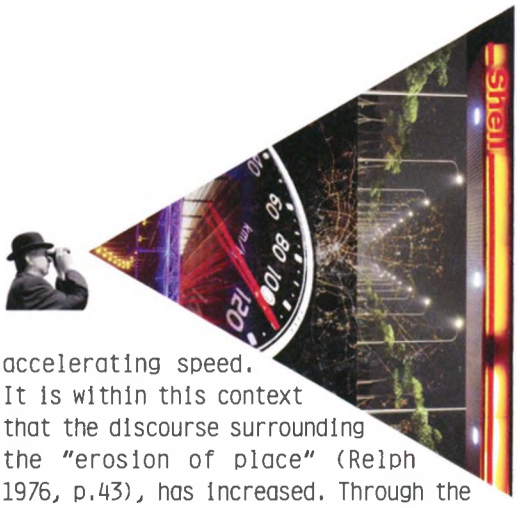
The power of language donates meaning to the built environment of edge cities. In order to manipulate edge cities into seemingly 'real' places, developers and politicians often construct appealing names and slogans. Site specific examples include: Verona Valley, Country View, and Crescent Wood Country Estate – all of which connote places that promise sanitized, safe and secure living. Policy makers, urban planners, and architects therefore play vital roles in place-making by considering both the image and language in relation to design. Kevin Lynch (1960), explores the urban form from a planner's perspective and its meanings for society in his pioneering book, *The Image of the City*. He introduces a notion of "imageability", which he describes as "that quality in a physical object which gives it a high probability of evoking a strong image in any given observer" (Lynch 1960, p. 9).

Although it proves simpler to communicate the concept through the spoken and written language, it is often more challenging to realize "imageability" on the landscape itself. Conventionally, it is a collection of "outsiders" that decide the structure of urban spaces, and thus, the intended experience of place.

Image & Lifestyle

Century Property Development's print campaign for their residential development, Waterfall Estate

FIG. 1B.08



Illumination & Navigation
Illustrating our vehicle-driven lives

FIG. 1B.09

The author argues, that the outsider's task should not simply portray their subjective impression of an ideal place, but respond to the desires and needs of the individuals who utilize that place.

HISTORY AND AUTHENTICITY

When evaluating the elements which have a direct impact on place, one must consider time. As humans are mobile and directive in nature, so 'place' is constantly transformed through their mobility and directive activities. It is thus through this constant transformation that meaning is reassigned over time. In our older cities, we capitalize and at times transform our past, so as to live out new experiences of our social memory. The edge city - society's latest reflection – signifies our present condition as consumers. Here, we to have projected an image of the future where society strives to build ever bigger, better, and further apart.

In addressing the contemporary landscape at the turn of 1970, Relph (1976), identified change in the urban environment where placelessness was rapidly becoming more apparent. Furthermore, he claims that authentic relationships with place became challenging as people could not develop as existential insiders to inauthentic places. Although the inauthentic landscape is noticeably visible, society subsists unaware of its meaning. Similarly, there remains a thoughtlessness regarding the forces of power which control place-making. In this regard, place becomes a vehicle for manufactured experience, something that is echoed in Midrand as a space for temporary movement and consumption.
Within the contemporary urban landscape, places integrate across globalized world. This global system allows the flow of people, products, and meanings at an accelerating speed. It is within this context that the discourse surrounding the "erosion of place" (Relph 1976, p.43), has increased. Through the homogenization of places, sensitivity and spiritual and social desire within the world has been lost. There is thus a void of meaning and attachment to anywhere. Contemporary life has become increasingly mobile, restricting pause for reflection and meaningful interaction. If places are to become meaningful pauses in societal routine, the recovery of a sense of place becomes critical.

THE END FOR PLACE

Literature regarding 'loss of place' is emerging. Specifically regarding loss of meaning and connection for residents. James Howard Kunstler, a pioneering contemporary writer on civic loss and new urbanism has published numerous books regarding the subject including, *The Geography of Nowhere: The Rise and Decline of America's Landscape (1993) and The City in Mind: Notes on the Human Condition* (2002). Kunstler cautions, "We'll have to give up our fetish for extreme individualism and rediscover public life" (Kunstler 1993, p. 275). His strong analysis of civic loss through urban design urges urban planners to re-evaluate the design repercussions they enact on civic life.

In response to Kunstler's harsh critique of the contemporary urban landscape, the paper seeks to introduce a key critical thinker, namely Alex Marshall. In his book *How Cities Work* (2000), he inquires into "The End of Place". Marshall realizes a potential for change but cautions that it "involves taking on our entire transportation system" (Marshall 2000, p.43).

He recognizes the crucial influence of the automobile and how this has shifted the urban landscape. The automobile was the enabling factor allowing people to leave the urban place, once imagined as restricting, and pursue their personal perception of the ideal place. As a result, societies are faced with a unique suburban problem, namely; a separation of functions. Hence, the value of a centralized place has re-emerged.

While Marshall (2000) concurs that the influence of the automobile was inevitable, he contends that the purging of other forms of transportation, such as the railway networks is questionable. He debates the merit of reinvestment in the railway network, in order to deliver both circulatory transit within cities and to connect to cities beyond.

The author concurs with Marshall's ambivalent attitude towards the edge city. On the one hand "cities with a sense of place go back to the dawn of recorded history", on the other, the edge city signifies an important consequence of the expansive highway network that has been constructed over the past half-century: "The stories of cities without a sense of place began about 1945" (Marshall 2000, p. 63).

RECOVERING A SENSE OF PLACE

Contemporary edge cities no longer resemble their initial rise as regional malls and suburban business districts. Further, they do not reflect the time-honored downtown depictions of our social memory. Critics contest that they cannot be classified as cities at all. The reality of the matter is that edge cities today form an interface for regional economy, provide a vital space to global markets, and are rapidly becoming residential in nature. While the edge cities condition matures, they are undeniably a world away from traditional cities.

Since the edge city provides a twenty-four hour population, it has the potential to foster a community of shared place. In this regard, a novel history could be written. The challenges herein, will be to promote a sense of community within an exceedingly mobile and diverse population. Additionally, it shall require human initiative and guidance to form specific places within Midrand that could cultivate 'genius loci' - a Latin term used to describe the spirit of a place. Finally, if the edge city is to become the direction of the future, one must consider who the clientele will be: the individual; the community; the visitor; or the automobile?

Exploring Midrand for genius loci therefore proves a difficult task. Sense of place cannot be measured or mapped, nor can society superimpose traditional rules to it. The author argues that a sense of place, which incorporates the multitude of factors outlined in this paper needs to be built into the design intention. In doing this, the designer creates a space which has the potential to become a depository of meaning.

A sense of place is ethereal, formed by subjective intention. Through the foresight of urban designers, architects and policymakers, edge cities are realized - orienting the individuals who occupy them - while providing a sense of well-being, security, and comfort. It is through community building and social interaction that relationships and experiences to the edge city may become a collective and over time history may be built. It is expected that as individuals develop a notable bond with

the edge city, shared knowledge of the city becomes tacit, and specific places become revered. This is most optimally cultivated through appealing informal social places of gathering. Herein, individuals not only have a fulfilling experience, but a binding social one too.

CONCLUSION

Based on the aforementioned discussion, it is clear that there is scarce indication of existing consensual sense of place in Midrand. It seems to symbolize a disoriented space where individuals are required to buy something or to move on. Apart from within commercial complexes, no successful green spaces or public squares exist for people to assemble or revitalize. Additionally, there seems to be a lack of any communal or civic space. Instead, there are only malls to supplement these functions.

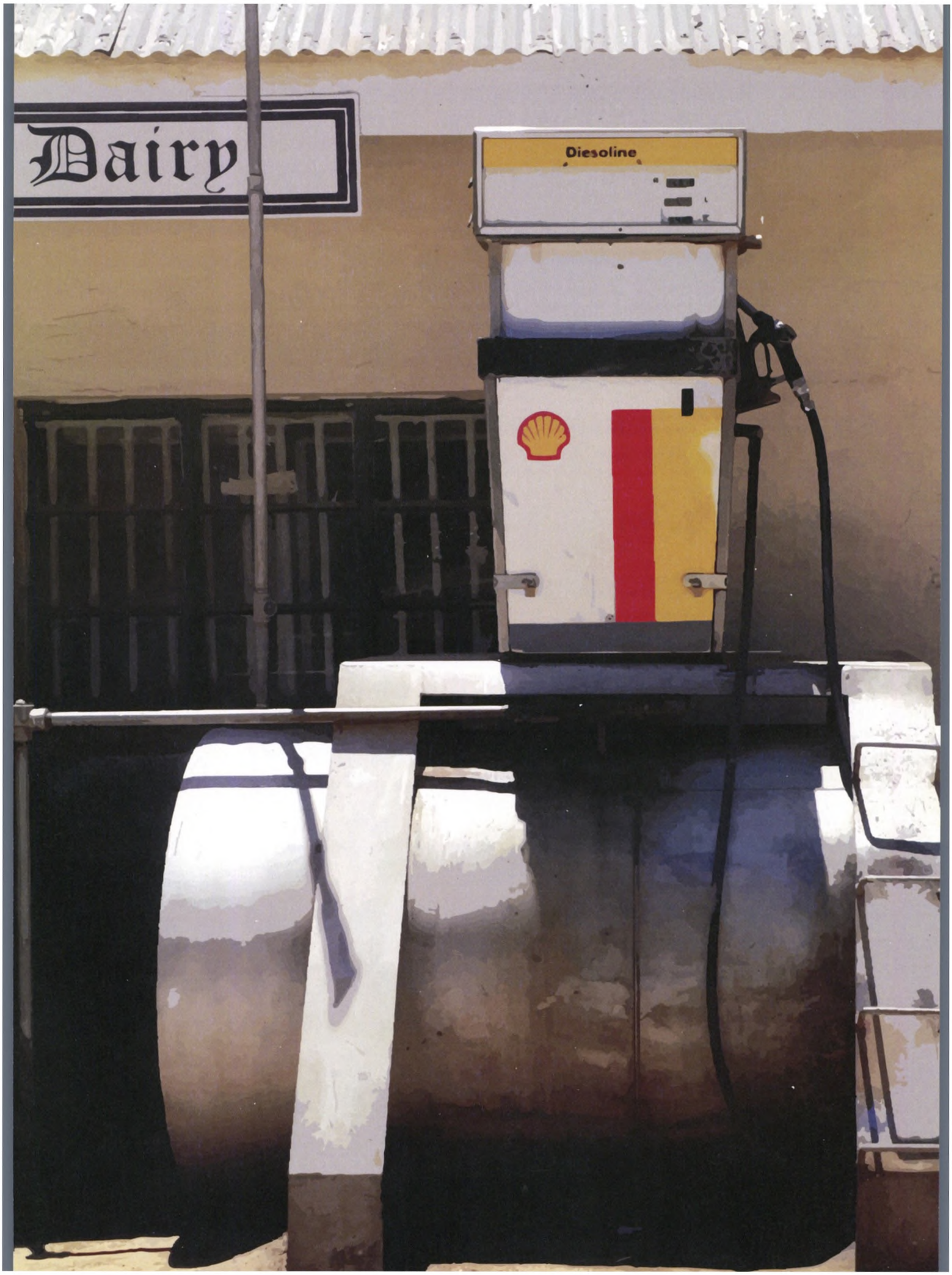
Today, driving through Midrand suggests the appearance of a city under construction: There are rapid manipulations of the landscape occurring which include removal, renovation, and erection of infrastructure and commercial and residential space. It is the authors wish that these new developments shall enable Midrand to develop into a functional and livable place, rather than replicate the planning and development failures dominant in the past. The ability to recover a sense of place centers on the presence of 'successful' places. By this, the author refers to those places that balance leisure and functional activities; social opportunity; community cohesion; connectivity; ease of access; public image; security, and comfort.

Despite the idealized form in which the image of a sense of place is promoted in Midrand, the author suggests that these efforts be grounded in the notion that cities are lived spaces. After all, 'successful' cities are not simply constituted by livable and walkable spaces, instead they must allow for organic relationship development with the individuals who occupy them. Successful public places enable citizens, employees and visitors with an encouraging global orientation. To create such an environment, the author proposes the construction of places which allow one to pause between functional destinations. This pause in time and mobility may encourage people to participate in and strengthen social relationships. It is only through regular and significant contact that community may flourish and a sense of place recovered.

Greater Perpective

Reading the Johannesburg skyline from Midrand's Jozi Diner restaurant

FIG. 1B.10


Dairy
Diesoline

FILL'ER UP

AN ULTRA CITY CULTURE

This paper is an investigation into the role of the fuelling station in society, past and present. It attempts to understand the evolving form of this building topology in relation to its context or lack thereof. Focusing on the Shell Ultra City as a national case study, the author examines this through the theoretical perspective of 'non-place.' Just as man's ability to multiply text and distribute it around the around the world bore a new age, so did his ability to refine petroleum and globalise it four centuries later. The post-war generation holds sentimental value in the fuelling station, which became intrinsically linked Western consumerism. In a globalised age driven by heightened mobility, both social and geographical, they stand profoundly symbolic. The paper highlights a 'creative sacrifice' through refining the form in performance-driven industry. The author explores how the fuelling station has come to define our national highway system, characterless strips cutting through rural and urban landscape.

Form & Function
Curbside fuelling station in rural Hogsback, Eastern Cape

INTRODUCTION

This paper utilises the fuelling station, specifically, the Shell Ultra City model, as a case study, to analyse the form, function, and role of an architectural structure. To do this, the paper journeys through history, beginning in the first and second world war both indicative of contexts located in dry, clinical mind-sets; towards the post war indulgence of American consumerism. The paper shows how fuelling stations came to symbolise an industrial culture, integrally linked to human experiences of freedom and discovery. The paper argues that the design of these fuelling stations came to play a role in influencing mood states as road usage became more congested and restricted. The author will show that the Ultra City model is linked to the anthropological notion of a 'non-place' within the South African context. It is here that the author clarifies his position with regard to 'creative sacrifice'. Finally, the paper explores the evolution from the 'decorated duck' to the 'decorated shed' and links the Ultra City model within this.

Standardization
Canopy, minimal footprint and underground resources

FIG. 1B.12

AUTOPIA

Eugene, a character in Eugene Tarkington's novel, The Magnificent Ambersons (1918), puts forward an open end notion prior to the end of World War I, and creates a space from which this paper begins to explore.

> "With all their speed forward they may be a step backward in civilisation – that is, in spiritual civilisation. It may be that they will not add to the beauty of the world, nor to the life of men's souls. I am not sure. But automobiles have come, and they bring a greater change in our life than most of us suspect." (Tarkington, 1918)

Petroleum powered vehicles, produced in the late nineteenth century, were too provocative to be dismissed as mere entities. Fuelling stations initially held a utilitarian meaning. They were a collection of pumps and reservoirs to replenish needed petrol and oil. To the eye, they were a series of unadorned sheds and machines; performance based functional machinery created an environment devoid of a romance with technology. The consumers' expectations were clear. This utilitarian function was the beginning of a road, as fuelling stations soon won larger audiences with more broadly based cultural affections (Jakle & Sculle, 1994).

In 1942 Orson Welles wrote and directed an acclaimed film adaptation of Tarkington's book. By this time popular opinion had begun to shift. World War II was coming to an end and so were the days of conservancy. In the United States a cultural rebellion was brewing. A new generation wanted to experience something beyond the dry, compliant and conformant institution that was 'America' (Surat, 2014). The conservancy which had ruled the lives of the west was soon to be substituted for excess and consumption.

The automobile came to symbolise American consumption. A global surplus in petroleum, forced prices down to consistently low levels, leading to easy accessibility and a popular culture embracing this industry. Vehicle sizes ballooned. Highway expansion was made imperative. The motor vehicle could not stand alone, it was integrally related to the fuelling station. Part of the mystique of automobilitiy was the use and care of the motorcar as machine. Central to car maintenance was the fuel station. The 1950s proved to be a period of rapid expansion for the industry in

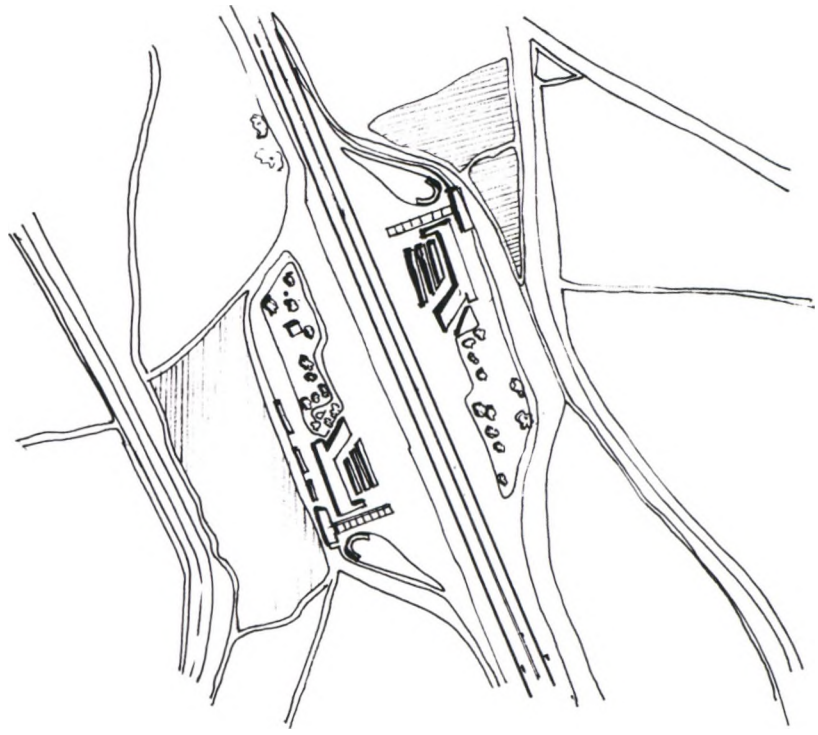
Urban Oasis
Perspective on arrival to Estcourt Ultra City, KZN

FIG. 1B.13

the Western world, and fuelling stations served as clear indicators of changing architectural landscapes in the twentieth century (Jennings, 1990). A cultural romance with the fuel station had begun.

Their design was inspired by a bourgeois enthusiasm for travel; speed and freedom. The motor vehicle design lent novel attributes to travelling, creating exciting and exhilarating travel experiences. Literature, film, and music were all fueled by this growing phenomenon, none more so than the Beat Generation. The Beats were a group of American authors who originated from a period of sterility and rigidity. Their work defied this. They rose to prominence rejecting received standards and materiality, and celebrated discovery and freedom. Two highly influential works of Beat literature, namely, Jack Kerouc's "On the Road"; and Hunter S. Thompson's" Fear and Loathing in Las Vegas", attributed this new sense of discovery and freedom to the open road. With the increase in world populations, the amount of vehicles on the roads has increased over time, together with the reliance on transport. In addition, national dependency upon the private vehicle as a means of effective transport have changed this deep-rooted culture of travel from adventure to frantic rush from point A to point B. In this regard, the experience of freedom and discovery now incorporates heavy traffic and long tiresome distances on our monotonously efficient highway system.

This change is also reflected in the design of fuelling stations. Rather than outposts servicing the car, our highway fuelling stations attempt to provide super-efficient points of response for the commuters. In an attempt to evolve the design of highway stations, with the changing psychology of travel, fuelling companies have responded by maximising efficiency of service and amenity in an effort to provide a 'calming' environment in which to spend money. The workshops, grime and oil have disappeared, clean and sanitary toilets, shading plants and lawn aim to create oases along 'inhospitable' terrain.



Highway Symmetry
Aerial of Estcourt Ultra City along the N3 highway

FIG. 1B.14

NATIONAL PRECEDENT STUDY

In this paper, the author has chosen to use the Royal Dutch Shell owned "Ultra City", as a case example of a highway fuelling station chain. This model has come to define South Africa's landscape along its primary arteries.

The Ultra City model, relies solely on the consistent flow along another global phenomenon, namely, the highway. These routes are strips of "network urbanism" cutting through rural and urban landscape (Dupuy, 2007). In the South African context the highway has diverted flows from the high streets of towns and small cities. Since dealing with a national, even global phenomenon, it became apparent, that this type can 'land' anywhere, where high traffic flows warrant it.

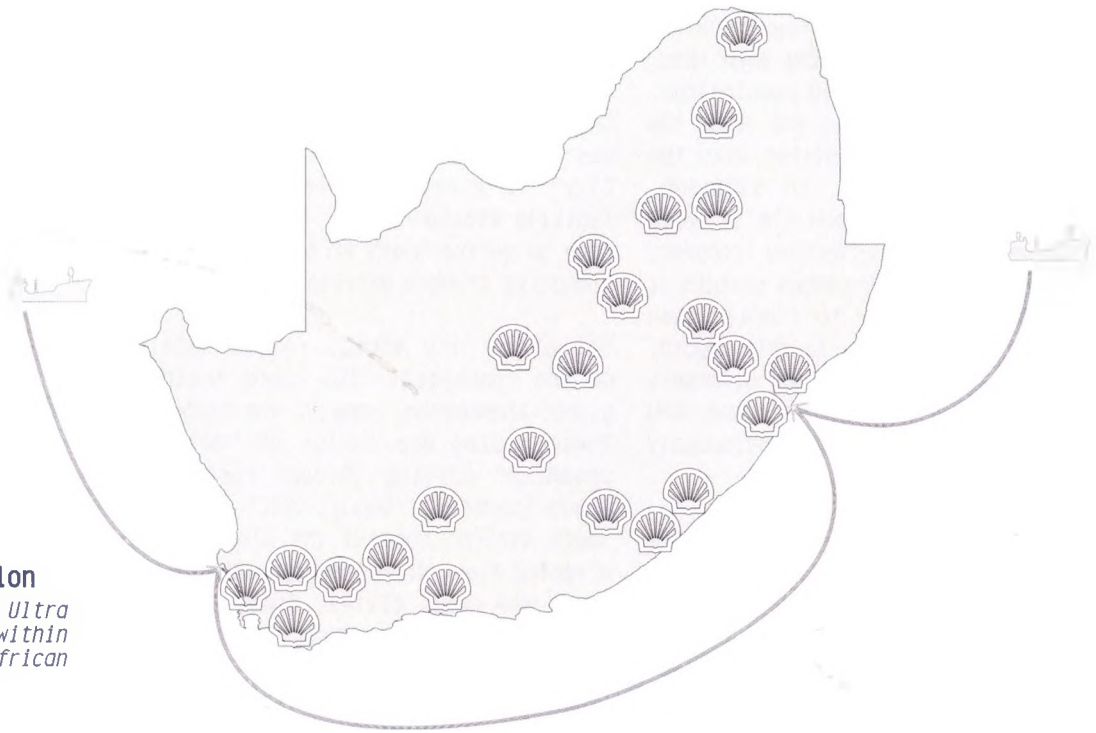
Hence, the culture of the motor industry did not remain isolated to the American context, but through globalization and a capitalist economy, it planted itself on a diverse South African territory. It becomes apparent that certain spaces are not context specific, but are in fact portable and homeless.

NON-PLACE

> "If place can be defined as relational, historical and concerned with identity, then a space which cannot be defined as relational, or historical, or concerned with identity will be a non-place." (Augé, 1995)

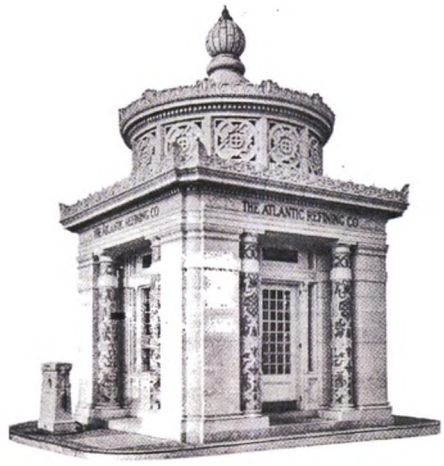
These locations along a route can be termed "non-places." A term was coined by French anthropologist Marc Augé, who wrote Non-Places: Introduction to an Anthropology of Supermodernity. Augé argues that in a time of supermodernity non-places are created. The distinguishing factor of the contemporary period of supermodernity is excess, meaning that non-places are results side effects of the excess of space, time and ego. Hence supermodernity is formed through the logic of excess and consumerism. The author notes examples of 'non-places' which include airports, supermarkets, hotel rooms, motorway and other spaces of transit.

Moreover, Auge distinguishes non-places as having lacking identity, history and void of urban relationships. Such places are temporary spaces for movement, communication and consumption. The highway and fuelling station are forever seen from the perspective of vehicle. The author refers to how these spaces have simply been designed to be passed through and consumed rather than appropriated, retaining no trace of our contact.



Ultra Nation
Mapping the Ultra City model within the South African landscape

FIG. 1B.15



Relics of the Past

Wadham's station in Wisconsin, masquerades as a Chinese pagoda (left)

Atlantic Refining Company's "Greek Temple" (right)

FIG. 1B.16

'Following the same signs we swung around the same flower beds in the same squares' (Augé, 1995). As one travels along the highway, places transform into non-places along with the abstracted direction signs. The highway is typical non-place of travel, as the experience is notably temporary and anonymous. 'The downtown streets displayed goods, packages, signs that had no changed at all' (Augé, 1995). Designed as convenience stops along the highway, fuelling stations are just as transient a space on the international network of motorway travel, as airports lounges are. The only history as far as such stations are concerned are based in commercial activities and their identity is grounded in their solitary arrangement. Fuelling station can be said to be a dehumanising place, where we travellers all reduced to the stereotype of consumer, and uniqueness holds no currency. When traveling on a fixed route highway, choices are limited by necessity, leaving one forced to consume whatever is on offer; whether it is unhealthy and low-cost food and drink, or unhygienic toilets facilities.

Having explored the Ultra City as a typology and classifying it in terms of non-place, the paper will now outline issues related to performance, form and historical influences of design. Whilst the author respects the evolution of these structures, which has resulted in a perfect performance unit, he argues that creativity has been sacrificed for a branded formula.

The Ultra City model performs as an artificially implanted urban oasis, void of vernacular character. In rural areas the most up to date consumer items in a 200km radius are offered as stock is standardised to maintain consistency. There is further standardisation of a brand image and the perfection of a certain scientifically-based layout ensures smooth traffic handling and sales. It is the author's opinion that this model's strictly regulated performance has prevented it from becoming a node around which local enterprise could grow and benefit in a meaningful way.

It is the author's opinion that the performance of architecture today has become more important than its form. Efficiency in handling large flows of traffic is the dictating measure which rules architecture of this scale. The resulting form is then often clad in a particular way, often in total antithesis to its context and contents. The human experience is neglected in architecture which pays homage to our machine and information age. The Ultra City has everything to do with performance. It has to present a highly visible beacon in fast moving traffic, efficiently handling large flows of commuters. The efficacy and cost of prefabricated buildings enables fuel companies to construct more stations and thus rapidly develop larger trade territories (Jakle & Sculle, 1994). Shell's rapid deployment of Ultra Cites through South Africa took advantage of this prefabrication station structure.

Fuelling the World
Global oil dependance

FIG. 1B.17

GLOBAL & HISTORICAL CONTEXT

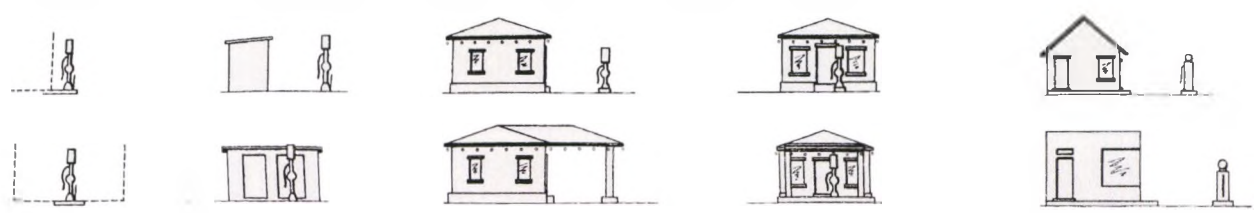
The earliest of fuelling stations developed around 1915 were nothing more than self-service curbside units, before which petroleum was dispensed in tin cans. It was only a decade later, due to fire safety restriction, when the first off-street, drive-in stations evolved. These early stations not only had to attract customers, but they had to be attractive as well. The fuel companies sought to build stations that blended into residential neighbourhoods and were designed to resemble small houses, sporting hipped roofs and a variety of architectural adornments to further embellish this façade. It took right up until 1970 before stations bearing little more than canopies over pumping units developed as we have are familiar with today (Jakle & Sculle, 1994). This is seen as the ideal design solution to the programmatic function, and this is evident as the form has barely evolved in almost half a century.

Prior to 'creative sacrifice', the late 1920s and the early 1930s saw many unique gasoline station designs appear in the United States. Filling stations were constructed to simulate a variety of novelties including: windmills, pyramids, pagodas, castles, mosques. In 1918, The Atlantic Refining Company styled their stations after a Classical Greek temple design. These structures included extensive colonnades with driveways faced in white terra cotta tile. When the ownership of the Quality Oil Company changed hands in 1930, the owners refused to expand using conventional building form, rather undertaking a novel advertising approach: the seashell filling station. The concrete fashioned building was painted corporate yellow with red letters spelling out "SHELL" above the building entrance (Jakle & Sculle, 1994). This unmistakable corporate symbol and local landmark went on to become the company's branding and thus a global icon.

The author argues that whilst he respects the evolution of this structure, dominated by performance, he questions today's fuelling station status as architecture. Learning from Las Vegas, by architects Robert Venturi, Denise Brown, and Steven Izenour, made "the distinction between the Duck and the Decorated Shed as architectural prototypes for our time: that is, the building as itself a symbol… and the building as generic loft whose aesthetic derives from its decorative or iconographic surfaces and applied design" supporting the latter as the future for architecture (Venturi, et al., 1977). In the 1920s a number of fuelling stations in America's Mid-West, were constructed in the form of giant gasoline pumps, the ultimate "Duck" and self-reflective symbol.

From Curb to Canopy
Illustrating the evolution of the fuel station form

FIG. 1B.18



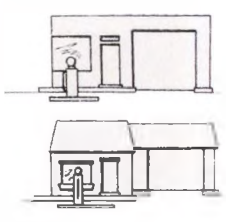
However, few of these novelty experimental stations built as attention-getters by entrepreneurs were replicated, rather neglected as costly experiments that did not produce the high sales necessary to keep them profitable (Jennings, 1990). They violated the basic idea behind place-product-packaging. Despite being in its infancy, architectural postmodernism is highly evident in these roadside experimentations. The use of colonial and other revivalist themes in roadside architecture are selectively borrowed and abused. Learning from Las Vegas speaks of a new aesthetic based on automobile-oriented sensitivities. The roadside cannot be understood with traditional elitist thinking; a freedom of popular expression now informs architectural sensibilities. Today vehicles are designed as capsules enclosing their users, shielding them along the inhospitable terrain of high speed travel. In the same sense roadside architecture shelters its users from noise and danger while responding to the fascination of watching 'the world shoot by' (Venturi, et al., 1977). These stations perform a duplicity of functions, triggering associations, and creating awareness - here architecture's performance transcends that of the car in creating responsive the places. It is the author's opinion that fuelling stations reflect these potentials in the same manner as does that of the vehicle, however it too reacts to the context with which it ties in and at the same time separates itself from.

CONCLUSION

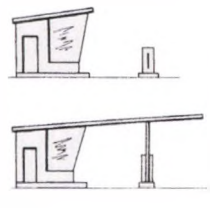
> "If on arriving at Trude I had not read the city's name written in big letters, I would have thought I was landing at the same airport from which I had taken off." (Calvino, 1974)

In Italo Calvino's short story Continuous Cities, he portrays a world of continual uniformity. Are all these non-place along South Africa's arterials becoming identical to Trude in Calvino's description? Do these non-places weaken our sense of identity? Even though a non-place, the absence of place, may suggest a loss of identity, it too has the ability to create its own unique experience of previously unexpected identities.

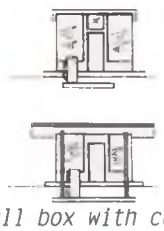
In conclusion, this essay has attempted to analyse the architectural structure of the fuelling station in terms of form, function, and role. The author has used the Shell Ultra City model as a case study to journey through history, revealing its cultural origins in American post-war consumerism. The paper further argued how design came to play a role in influencing consumer attitude, noting performance and efficiency as defining form factors. The author further illustrated how the Ultra City model is interrelated to the notion of a 'non-place' within the national context, and declared a stance with regard to 'creative sacrifice.' Finally, the paper analysed the evolution of this building typology from the 'decorated duck' to the 'decorated shed' which defines our global landscape today.



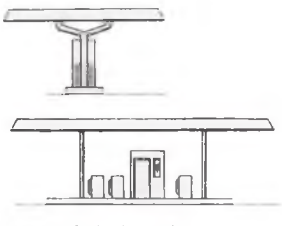
oblong box
1958



small box
1964



small box with canopy
1970



canopy with booth
1976

CANOPIES IN THE LANDSCAPE

A PHOTO ESSAY OF FUEL STATIONS ACROSS SOUTH AFRICA

This visual analysis is a study of how the fuel station has developed into various typologies throughout South Africa. As illustrated by the preceding essay, *Fill'er Up: an Ultra-City culture,* the form of a fuel station reacts to its specific context despite isolating itself in terms of place. The aim of this photo-essay is to capture this anomaly in order to draw connections between form and context of what is essentially a canopy in the landscape.

HALFWAY HOUSE

Stop & Go

Highway fuelling station under New Road Intersection (site selected for design intervention)

FIG. 1B.19

Suburban Convenience
Somerset West, Western Cape (left)

Birnam, Gauteng (right)

FIG. 1B.20
FIG. 1B.21

Vernacular Rural Canopy
Harrismith, Free State (left)

Kirkwood, Eastern Cape (right)

FIG. 1B.22
FIG. 1B.23

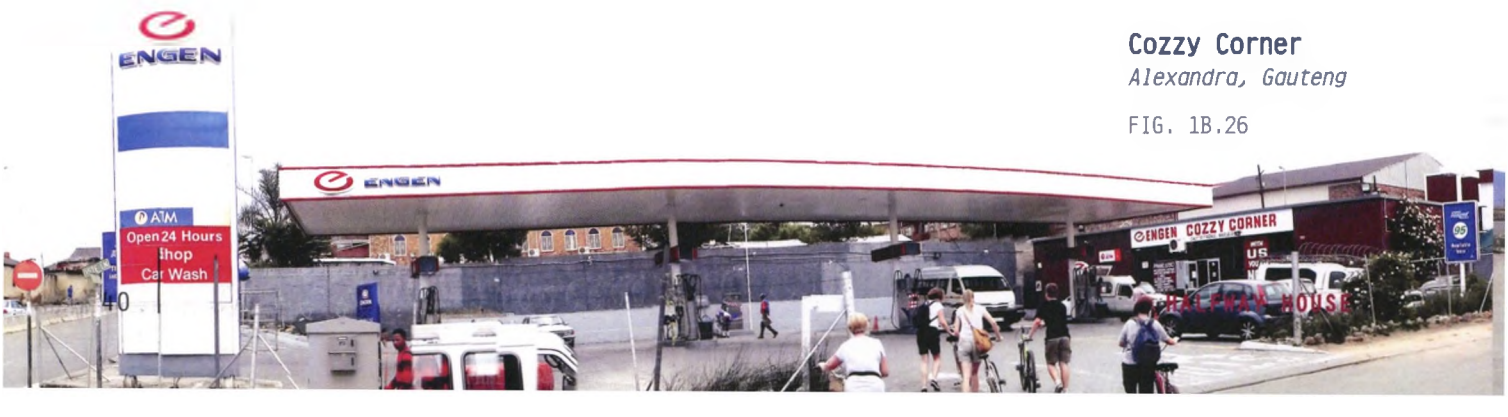
Agricultural Curbside Pump
Barrydale, Western Cape (left)

Sunland, Eastern Cape (right)

FIG. 1B.24
FIG. 1B.25

Cozzy Corner
Alexandra, Gauteng

FIG. 1B.26



National Reserve Filling Point

Golden Gate Highlands National Park, Free State (left)

Addo Elephant National Park, Eastern Cape (right)

FIG. 1B.27
FIG. 1B.28

Coastal Rest Stop

Nature's Valley, Western Cape (left)

Paternoster, Western Cape (right)

FIG. 1B.29
FIG. 1B.30

Ultra City Highway Station

Gordon's Bay, Western Cape (left)

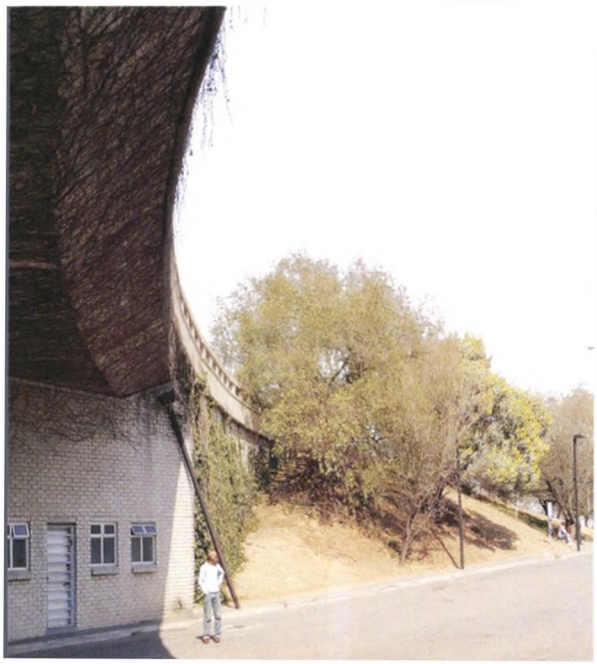
Belfast, Mapumalanga (right)

FIG. 1B.31
FIG. 1B.32

Atlantic Oil

Beaufort West, Northern Cape

FIG. 1B.33



PART C

BARRIERS & BRIDGES

FIG. 1C.01

THE SEGMENTED PUBLIC REALM

MOBILITY AS A PHYSICAL DIVIDER

CASE STUDY: MALPAS ANIMAL BRIDGE

Spiral Footbridge

Perspective of the spiral ramp from below (lower)

Aerial of link across the M4 motorway (upper-right)

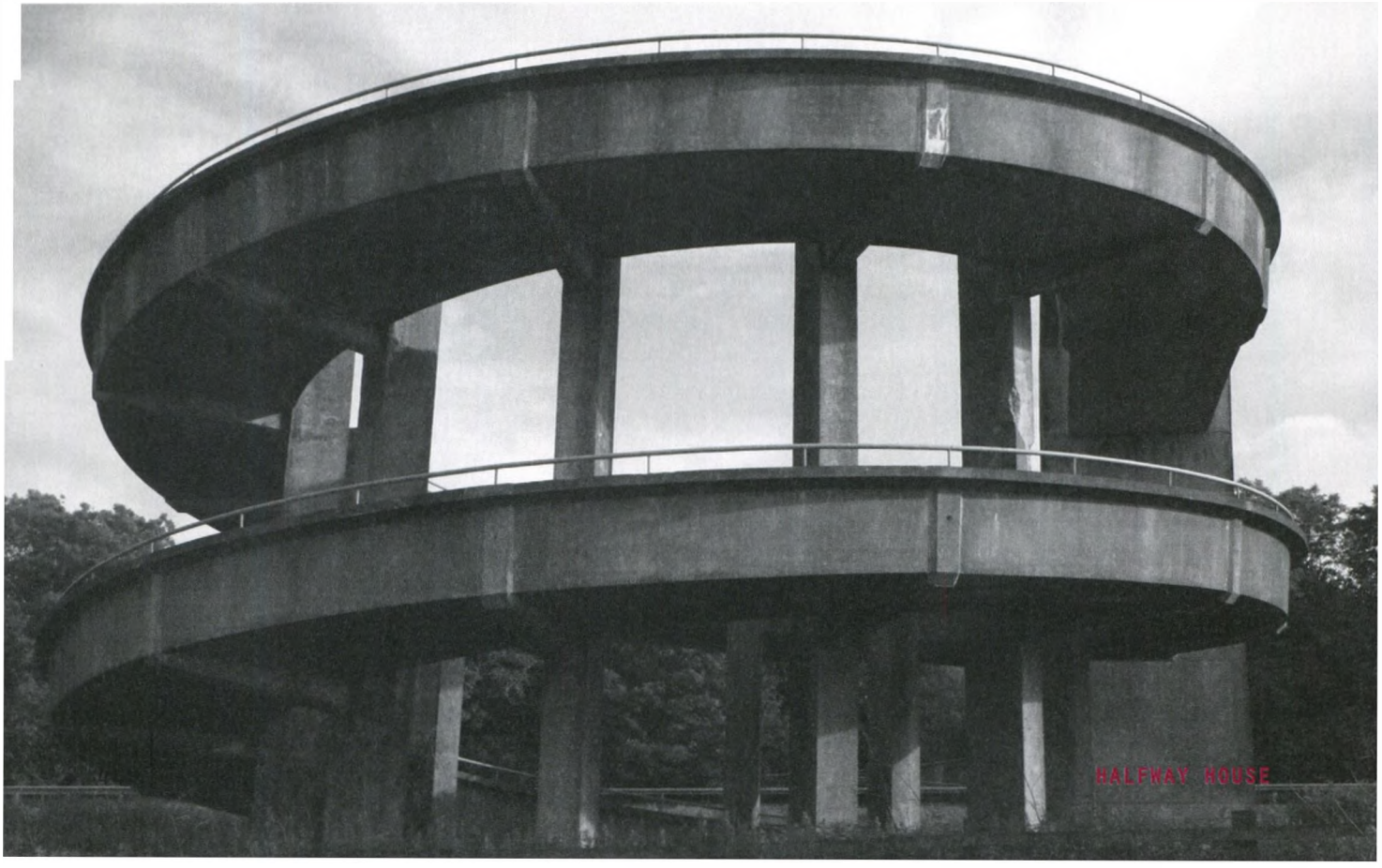
Crossing over the Malpas Bridge (lower-right)

FIG. 1C.02

This precedent explores the architectural landscape within and at the edge of the urban realm. It emphasises social and psychological situations, bringing into question our experience of the built environment. How is the countryside being incorporated into the urban structure?

An English farmer in Malpas, Swindon found himself stuck between politics and the architect when the Government decided to build a motorway through his land. A footbridge had to be designed and constructed to enable the farmer and his animals to traverse the farm. Thus, Malpas became the birthplace of a spiral footbridge designed by Sir William Gibb for a farmer and his cows, across the M4 motorway (Canning, 2000). Today, the bridge forms part of a cycle route despite its original agricultural purpose.

The farm, the motorway and the bridge; three competing conditions superimposed on the landscape. When reflecting on the Malpas footbridge and its meaning, it is a product, like the motorway, of our need to compress time. It is a short circuit through the landscape and through history.



URBAN (CAR)CASS

Our cities have been built on the dream of a smooth commute, suburbia, and big cars – however this all hinged upon the economics of a strong middle class and the infinite capacity of transport infrastructure. The dream has since revealed itself as mirage.

The turn of 1960 kick-started the global roll-out of privately-owned motor cars. From here on in, we allowed them to occupy every space in our cities.

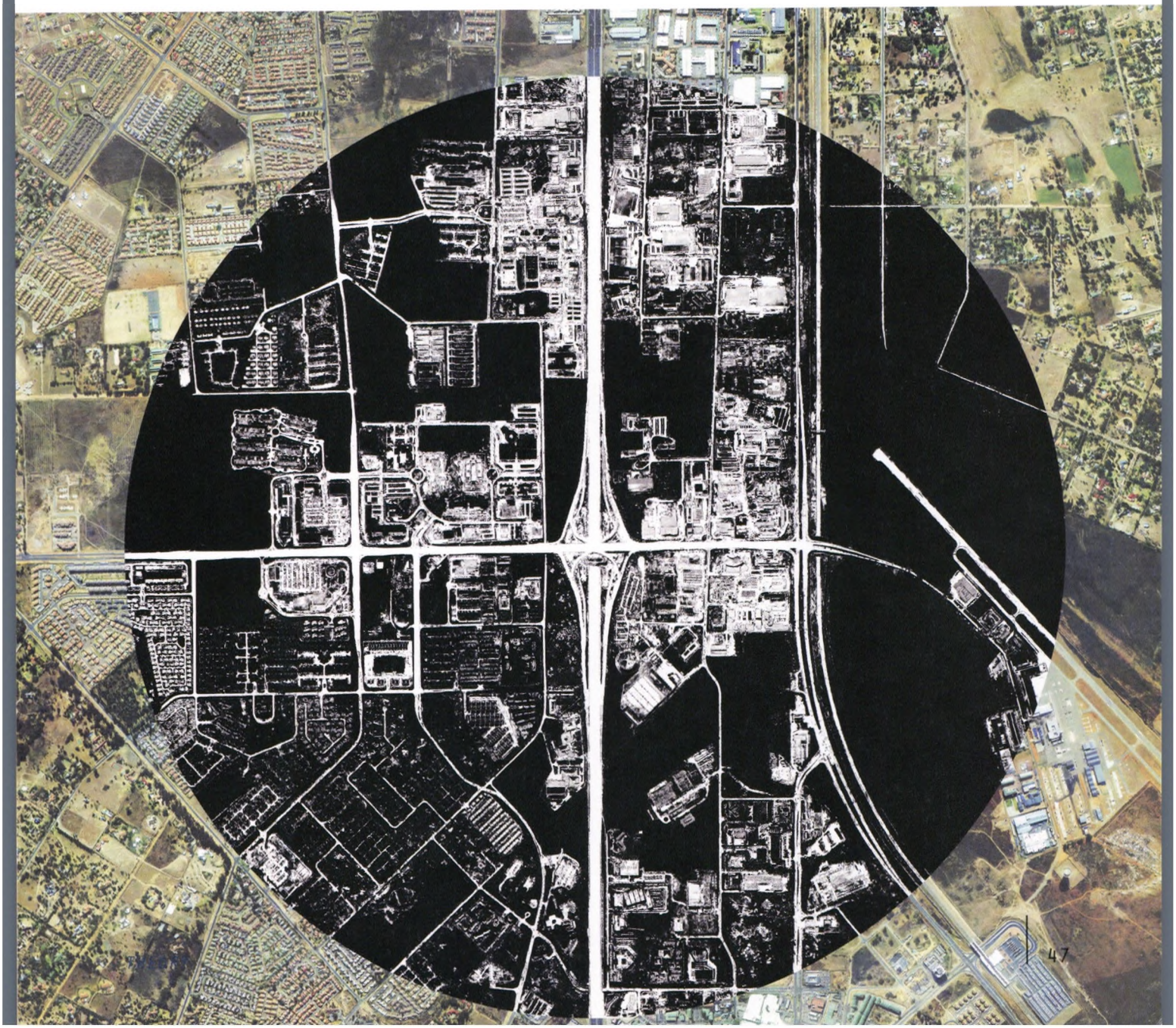
The motor car is integrally tied to our most influential movements over the last century. It was Modernism that shattered our historically human-scaled cities. Suddenly, everything was based on cheap gasoline. We began to reform our city and then our city began to reform us.

The illustration to the right isolates the transit network around the New Road interchange. What remains resembles the skeleton of the urban. These 'arteries of access' are often the barriers which segment the public realm for pedestrians.

Unsacred Mandala

Isolating the urban barriers of Halway House

FIG. 1C.03



THE EMERGING INFORMAL

MOBILITY AS A SOCIO-ECONOMIC DIVIDER

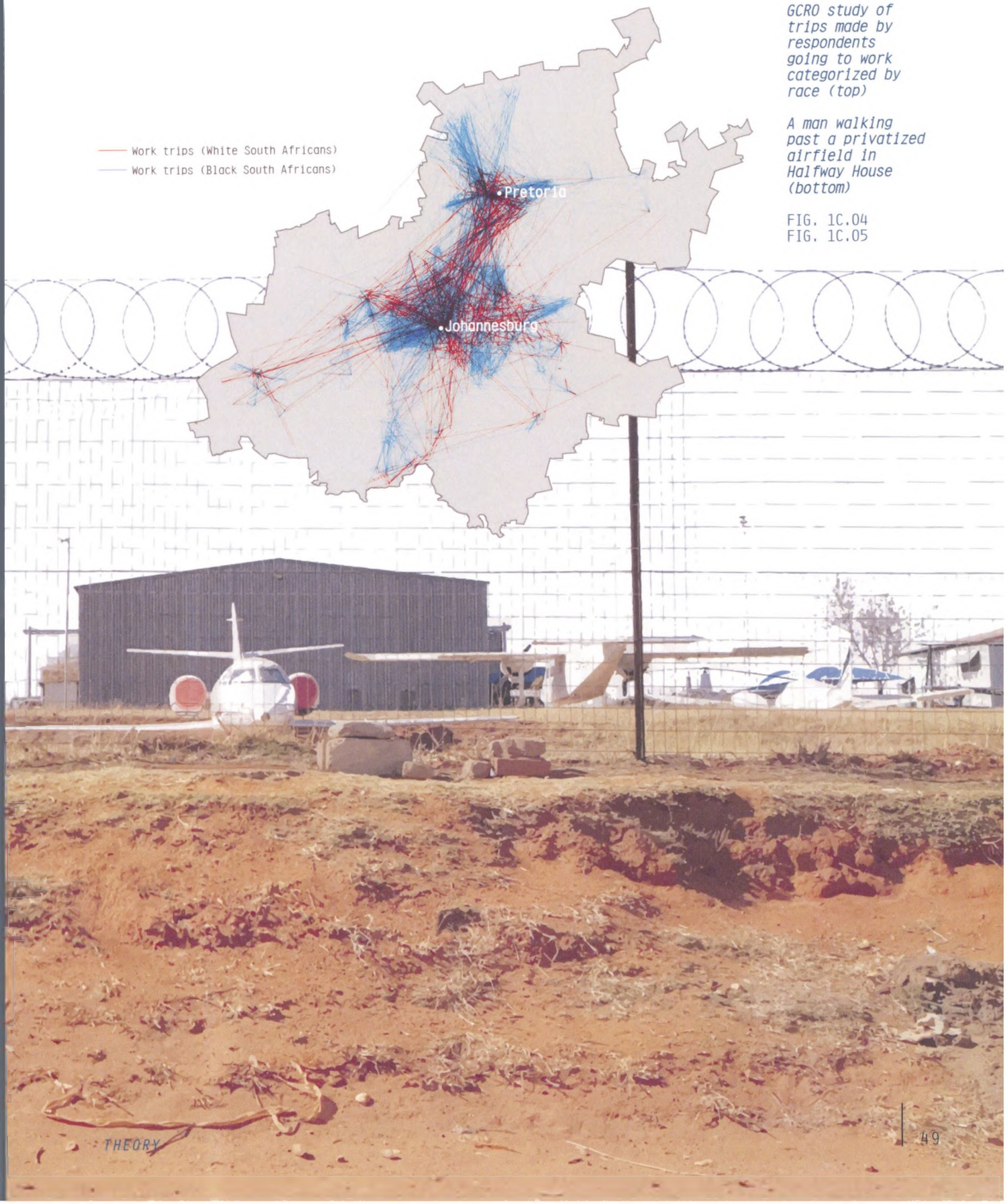
When understanding mobility as a form of energy exchange, one can map the geopolitical traces of a population. The diagram on the right indicates trips to work across Gauteng categorized by race. This reveals the devastating effects of Apartheid planning across the province. Below, a man begins his 3-hour journey to work from Tembisa. Each morning he walks past Halfway House's Grand Central Airport. This privately-owned airfield built on the grounds of a race track is a symbol of the excess of mobility. Johannesburg is a city where one cannot fully participate in society without private car ownership.

Democratizing Mobility

GCRO study of trips made by respondents going to work categorized by race (top)

A man walking past a privatized airfield in Halfway House (bottom)

FIG. 1C.04
FIG. 1C.05



Urban Intersection

Mapping a drive along the highway against a walk across it

FIG. 1C.06

HUMAN SCALE & SUPERMODERNITY

For most, the city is simply experienced from the perspective of the windscreen. Speed has been allowed to erase connections among people and the landscape. We have begun to live at super scale; where there are no people, details or deep sensory experiences.

Historically, cities were built at human scale, however today all 5km/h experiences, as sensitive as they may be, are left to take place on the surfaces of the super scale. The motor car has been allowed to erase connections among people and the landscape. Life at super scale has reduced place to location, limiting moments of pause for reflection and meaningful interaction. If our cities are to become meaningful; the recovery of a sense of place, through pause, is critical.

This photo-essay juxtaposes the experience of the journey from Sandton to Midrand along the Ben Schoeman Highway to the marginalized experience of crossing this same highway on foot.


SANDTON
Woodmead Dr
Star Stop
CALTEX

THE INHABITED BRIDGE

THE SPECTACLE OF MODERNITY

CASE STUDY: THE AUTOGRILL

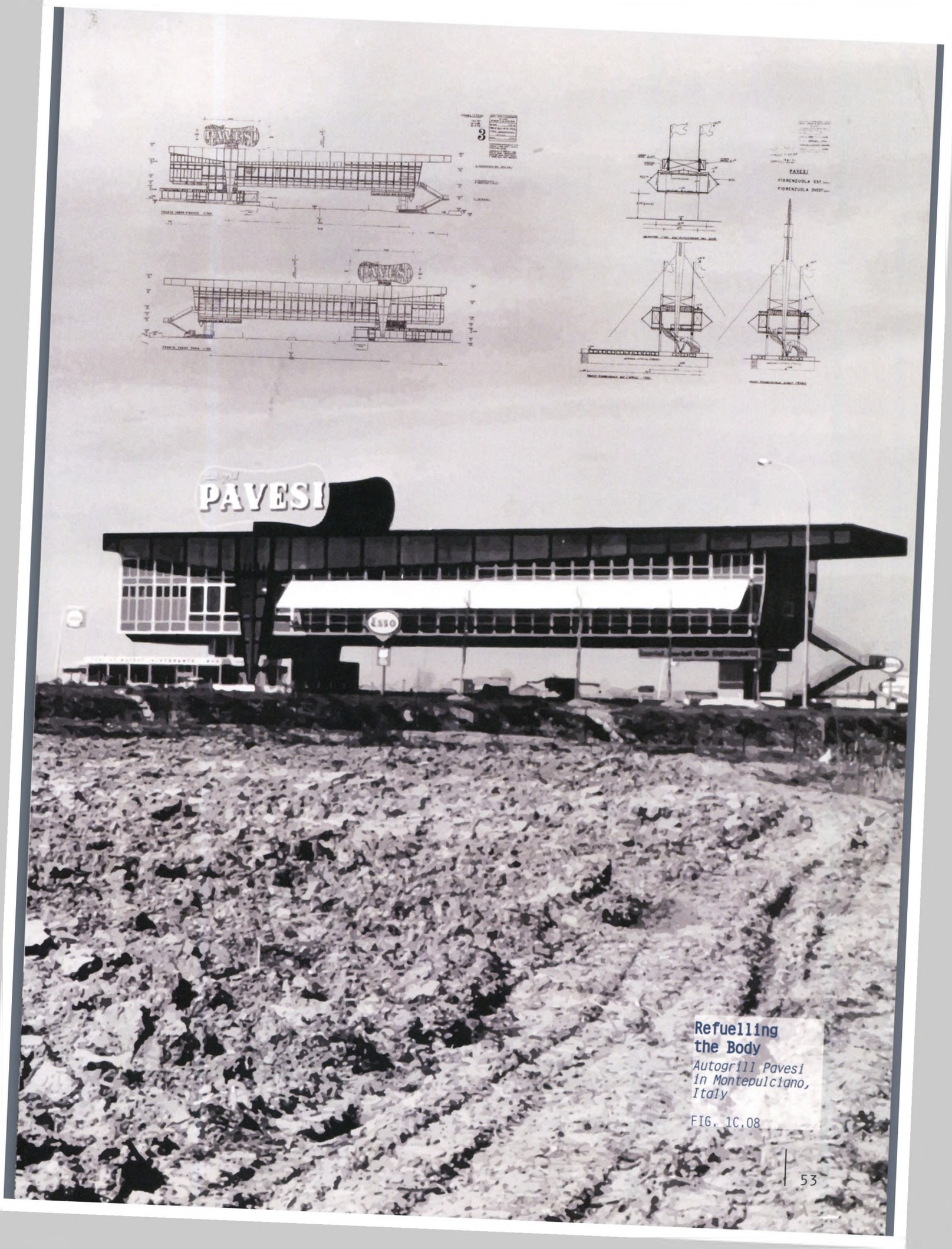
Modernism's affection for the open road bore a new building typology in Italy towards the end of the 1950s. This new form of architecture intended to attract customers, inviting them to stop and symbolically celebrate the transition to the affluent society. Cost-cutting - a single rest area for both directions - and the interest shown by motorists, turned the Autogrill into a huge success.

The Autogrill, much like the supermarkets of today was seen as an emblematic place of the contemporary. Nonetheless, while today supermarkets seem to have lost their symbolic value, what strikes one about the history of Italy's Autogrill is first of all the fact that they have managed to maintain a strong identity value for more than sixty years. This inhabited bridge is celebrated as the symbol of modernization and the affluent society and conversely criticized as display windows for consumerism and the expression of the postmodern "non-place." The Autogrill's unique historical and physical context have turned this form of roadside restaurant into "non-places," the places of memory, and "commonplaces" all at the same time.

Bourgeois Enthusiasm for Travel

Autogrill Motta in Limena, Italy

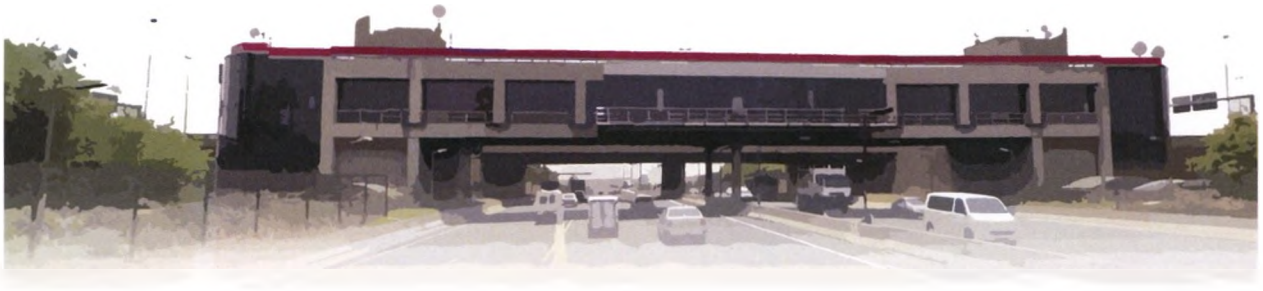
FIG. 1C.07



Refuelling the Body

Autogrill Pavesi in Montepulciano, Italy

FIG. 1C.08



Midrand's Autogrill
The Jozi Diner stretches across the Ben Schoeman Highway

FIG. 1C.09

THE JOZI DINER

Parallel to the Ben Schoeman Highway's New Road Interchange stretches Midrand's very own Autogrill. Connecting two Caltex-branded fuel stations, it was constructed 30 years after this restaurant typology emerged in Italy. However, it is an economic failure, having gone through constant re-branding since its construction. Instead of living up to its original purpose, it now functions as an informal pedestrian bridge, facilitating access across the Ben Schoeman Highway.

The topographical context of this 24-hour roadside-inn, means that it is one of the few places within Gauteng where one can see both the skyline of both Johannesburg and Pretoria. Its location alone as a national arterial means that there is no direct obstruction in either direction, north and south.

24 Hour Orbit

Using the Jozi Diner as a lens to capture the natural and artificial light of Halfway House

FIG. 1C.10

FIG. 1D.01

PART D

MAPPING MOBILITY

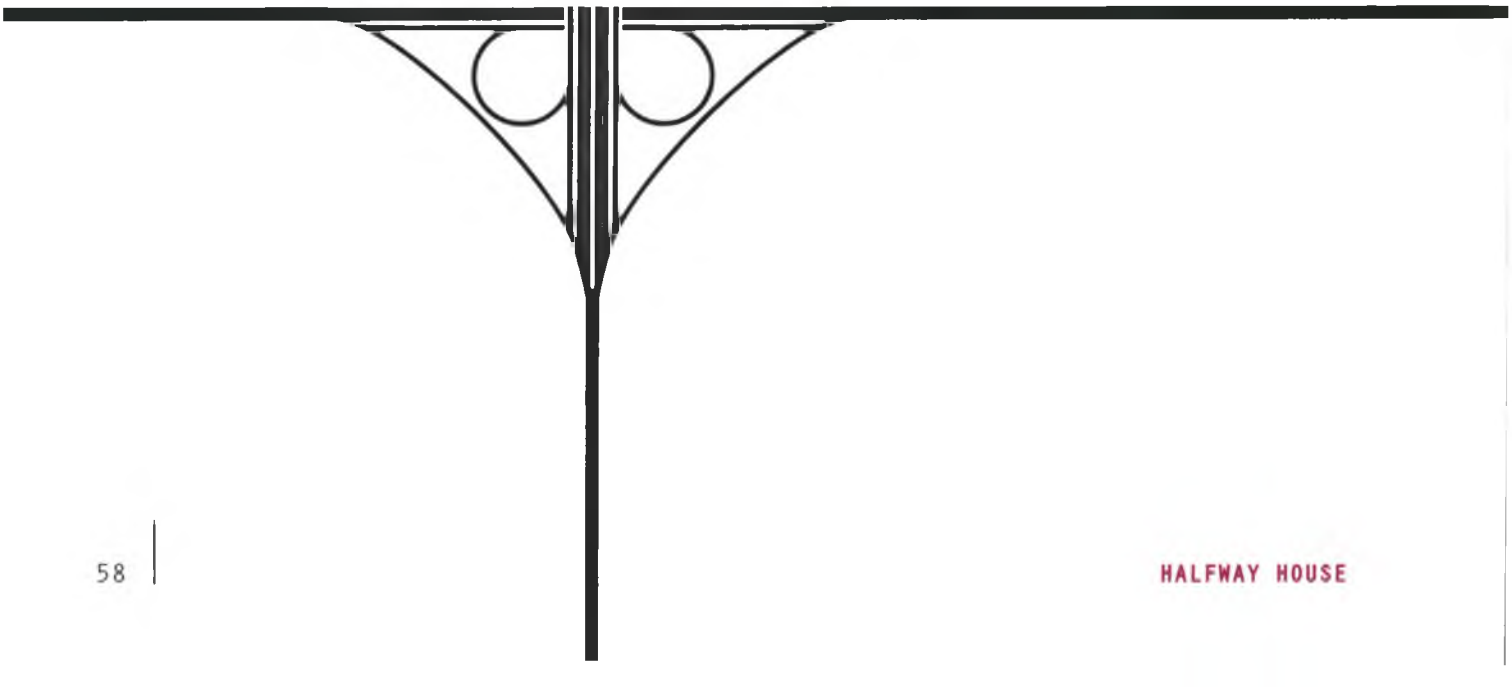
URBAN ORBIT

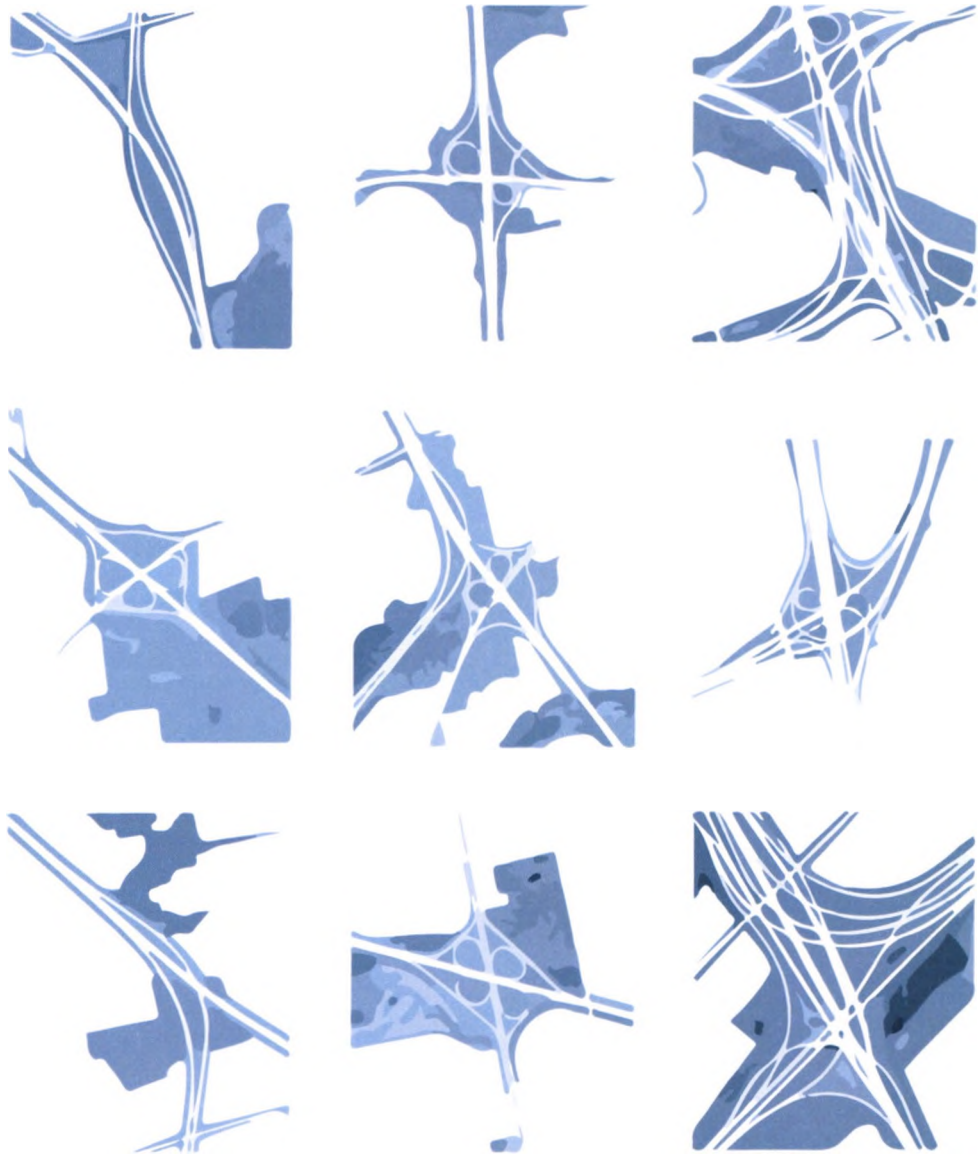
REVEALING THE FORCES OF INTERCHANGE

Our automobile-determined lives, like the stars that comprise our universe, are predetermined by orbitals - force governed movement paths.

When one goes from a known path to an unknown path there is a time of confusion. This confusion allows us to re-orientate ourselves. It is only in this process that we re-evaluate and thereby reposition ourselves along our journey in life. This reset journey is comprised of a rehabilitated orbital which is dictated by a renewed range of forces.

The author have chosen the familiar landscape of the highway interchange as a focus for the design intervention. These points of intersection, may be rethought as places of aggregation, exchange and interface as opposed to simply directional transfer. In systematically isolating the geography of interchange sites, the surface land orphaned by the infrastructural configuration becomes a site of systematic and strategic intervention.





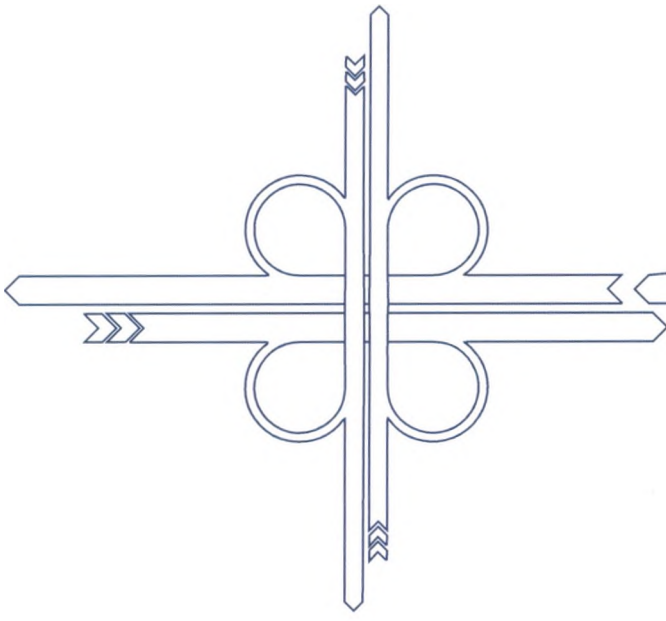
Roadscape and the Landscape

Illustrating how interchanges orphan themselves from their context

FIG. 1D.02

INTERCHANGE TYPOLOGY

01

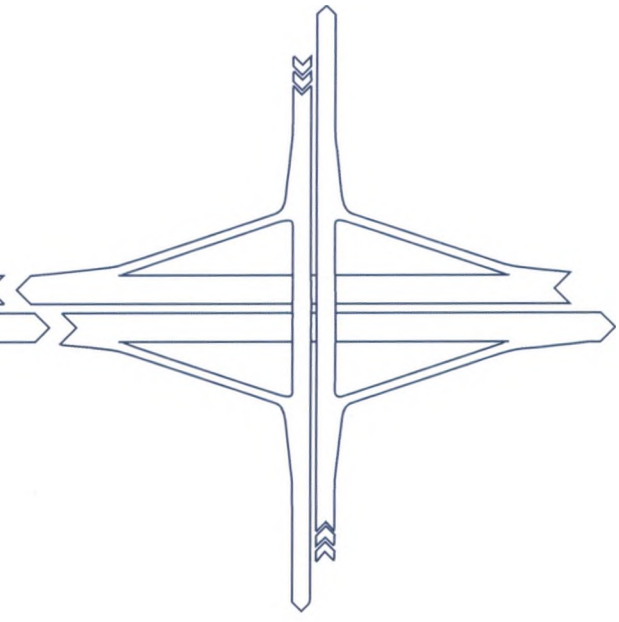


Cloverleaf

The classic cloverleaf allows "non-stop" full access between two busy roads. Traffic merges and weaves, but does not cross at-grade; unless the interchange is too congested, no stopping is required.

Typically a cloverleaf is used where a freeway intersects a busy surface street, though many older freeway interchanges are also cloverleaves.

02



Diamond

The basic diamond is often the design of choice for lower-traffic interchanges without special constraints.

It does not scale up well to heavy traffic on the surface street or ramps. Traffic signals can be installed at the two points where the ramps meet the surface street, but high enough traffic volumes can cause backups on the street and the ramps. All ramps function to connect the freeway to the surface street, as well as transition traffic from low speeds, or a dead stop, to freeway speeds.

03

04

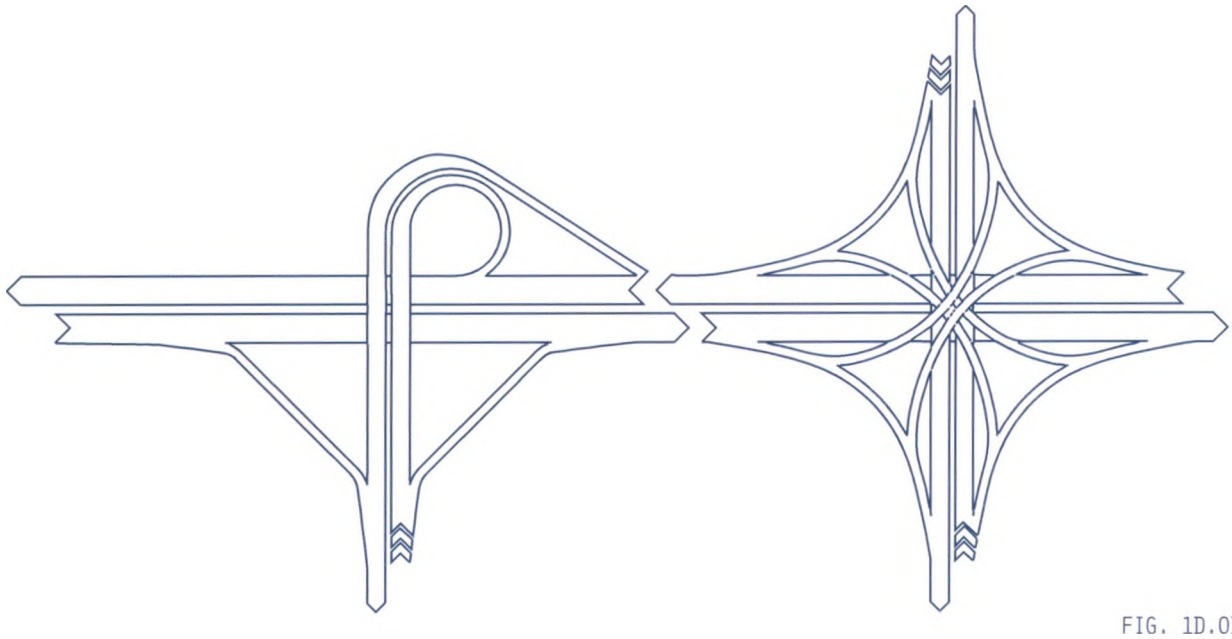


FIG. 1D.03

Trumpet

This is a conceptually simple way to end one freeway at another. Like a cloverleaf, it requires only one or two bridges, and designing for higher speed will take up more land.

Often an interchange involving a toll freeway to another freeway will be a double trumpet, with all connecting traffic stopping at a toll station between the trumpets. Sometimes more roads join in.

Stack

This type of road has a direct connection to the other roadways, with no looping or weaving, and the ramps cross in a 4-level deck you can see for about a mile. If the ramps are two lanes wide, the interchange has quite high capacity and drivers with good tyres may not even have to slow down. Furthermore, they are easy to navigate.

The disadvantages, however, may include geometry, materials cost, and local opposition. To raise a ramp 60 feet or more requires a lot of concrete, or fill, or both.

ALONG THE BEN SCHOEMAN HIGHWAY

Charette Exploration

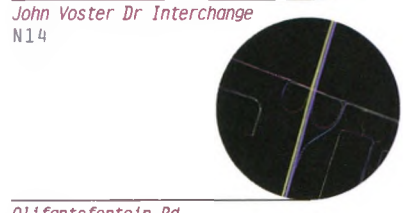
The charette mapping process attempts to illustrate the orbits, which currently dictate urban life. This is achieved through the manipulation of open-source GPS-traced mapping data, which is further coded to represent direction through the range of the colour wheel.

The Ben Schoeman Highway between Johannesburg and Pretoria is chosen as a precedent study. Initially, each interchange is isolated and traced. Secondly, the resultant diagrams are superimposed on one another before beginning a process of manual interpolation. This process, which is illustrated on the next page, attempts to reveal new orbitals from the existing configuration.

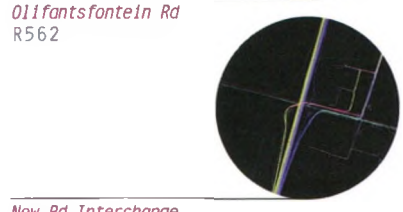
Eeufees Rood Interchange
M7

Lyttelton Ave Interchange
M34

John Voster Dr Interchange
N14

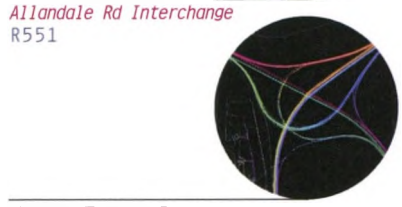


Olifantsfontein Rd
R562



New Rd Interchange
M71

Allandale Rd Interchange
R551

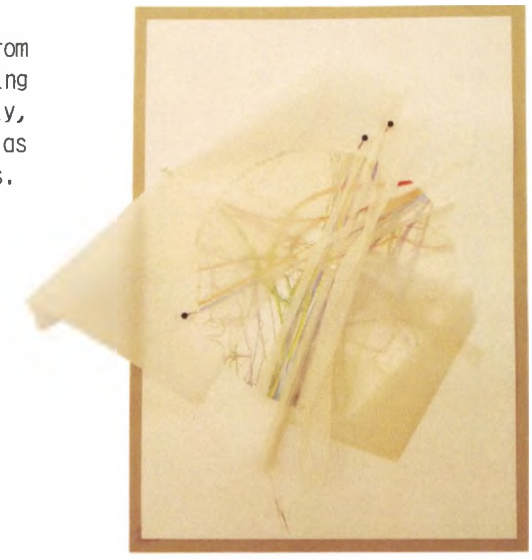


Western/Eastern Bypass
N3

FIG. 1D.04

1/ TRACING

An abstracted diagram is produced from overlaying each interchange. The resulting pattern is then explored volumetrically, weaving each segment of the highway as they meet at their respective heights.



2/ LINKING

In order to scale the study, a grid is applied to the surface of the diagram through a mesh. Corrosponding points are measureed and identified within the context and linked over the existing configuration.

3/ REDRAWING

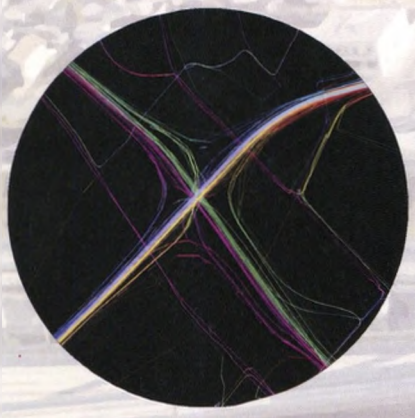
Using the above studies, a new series of orbitals are projected onto the site. These identify the key paths of contextual connection which are invisible within the landscape.

Model Study

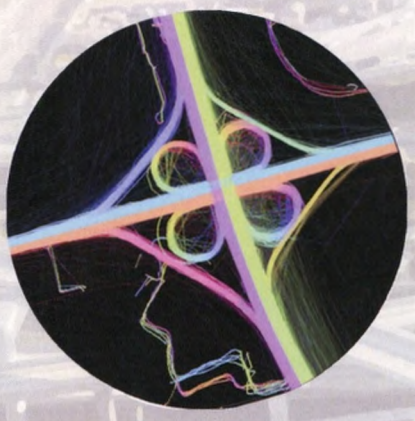
Series of sketch models exploring the a local highway precedent

FIG. 1D.05

INTERNATIONAL PRECEDENTS



Bill Keene Memorial Interchange
LOS ANGELES

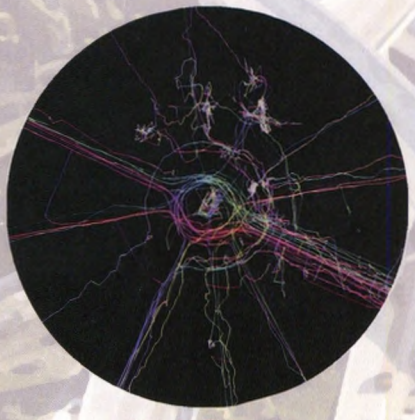


The Cloverleaf
MOSCOW

Judge Harry Pregerson Interchange
LOS ANGELES

Place de la Nation
PARIS

I-287 and I-95
NEW YORK

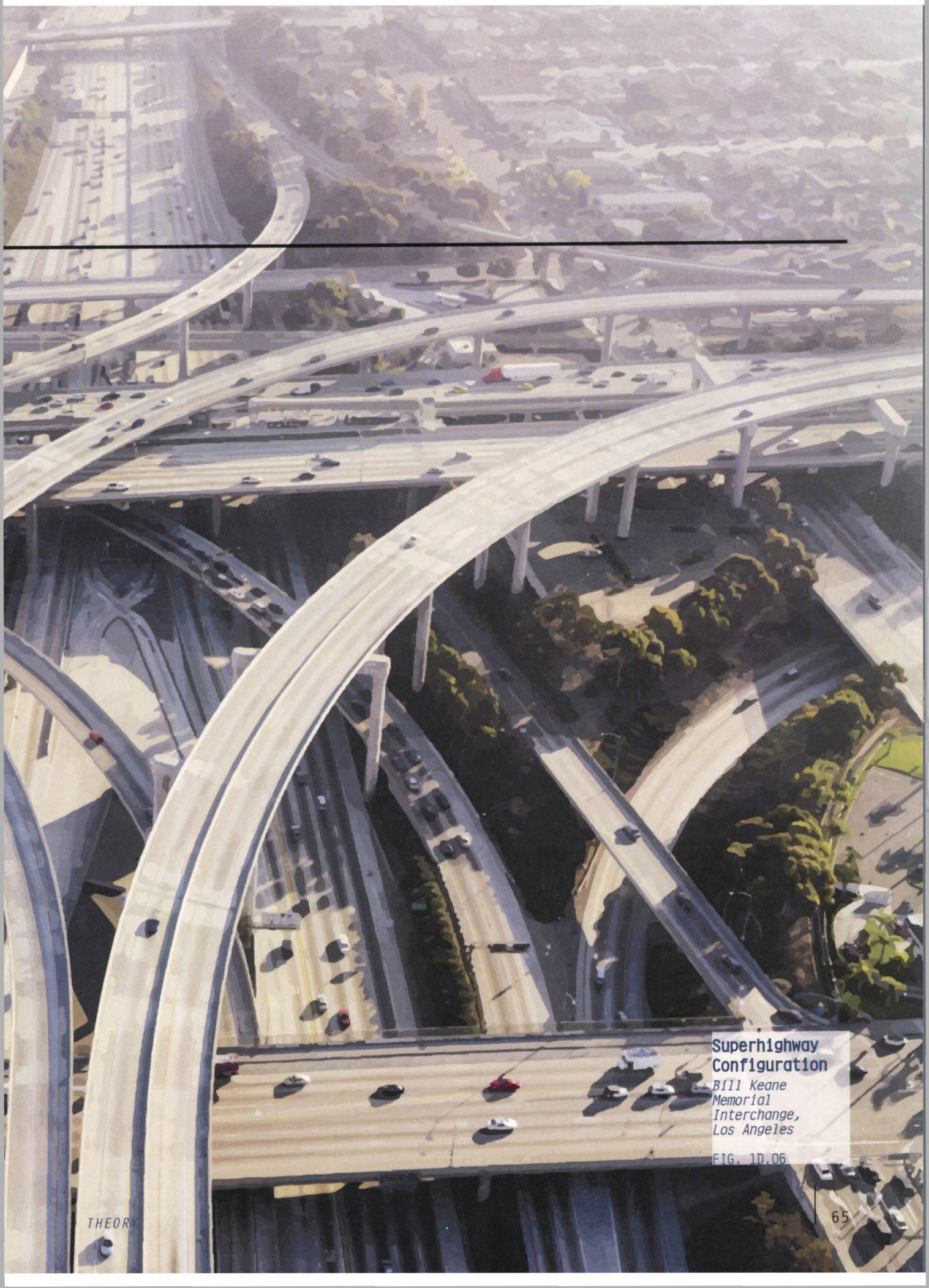


Arc de Triomphe
PARIS

Gravelly Hill Interchange
BIRMINGHAM

Breezewood I-70 Gap
PENNSYLVANIA

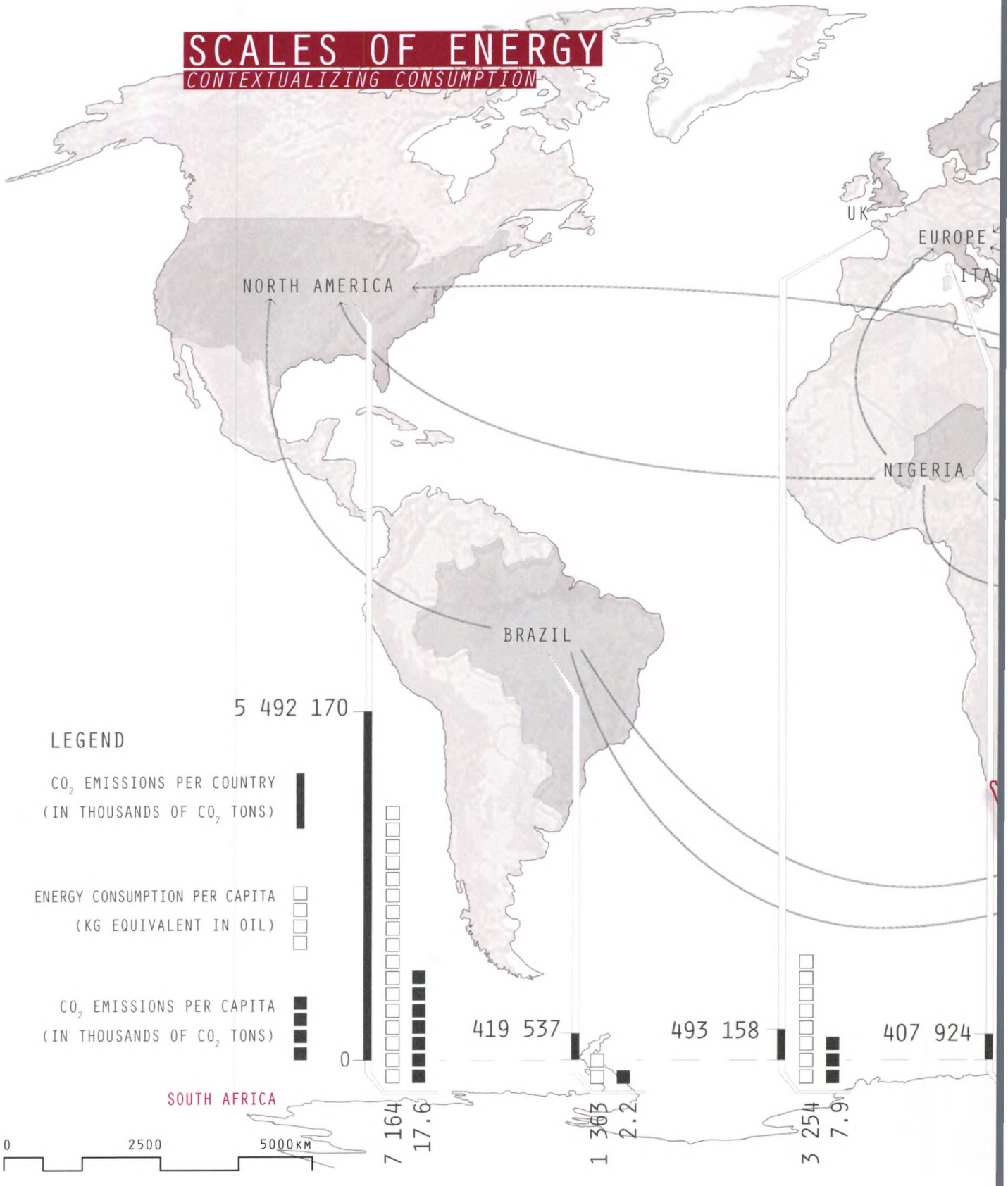
I-495 and I-95
NEW JERSEY

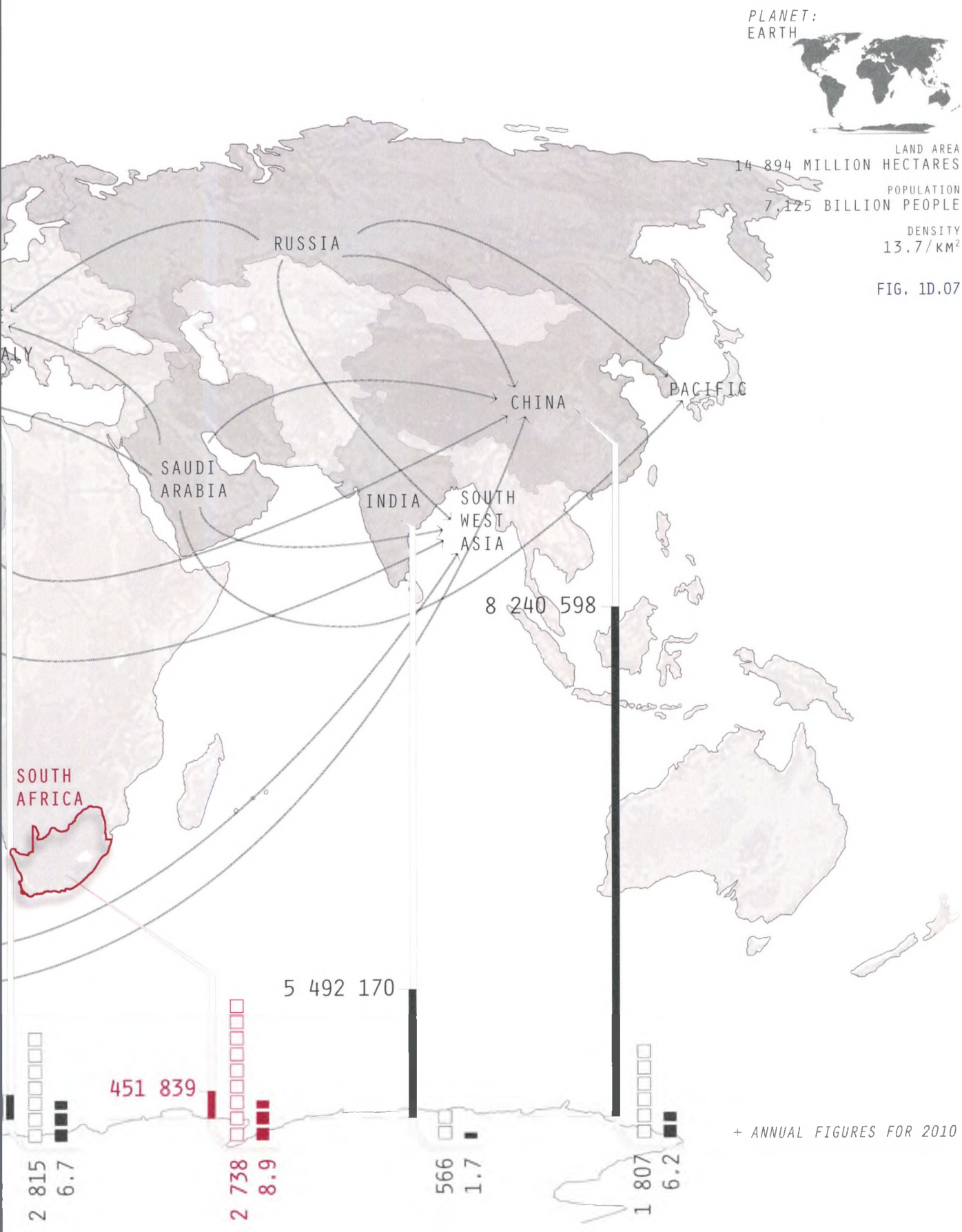


Superhighway Configuration

Bill Keane Memorial Interchange, Los Angeles

FIG. 1D.06


SCALES OF ENERGY
CONTEXTUALIZING CONSUMPTION
NORTH AMERICA
UK
EUROPE
NIGERIA
BRAZIL
SOUTH AFRICA
LEGEND
CO2 EMISSIONS PER COUNTRY
(IN THOUSANDS OF CO2 TONS)
ENERGY CONSUMPTION PER CAPITA
(KG EQUIVALENT IN OIL)
CO2 EMISSIONS PER CAPITA
(IN THOUSANDS OF CO2 TONS)
5 492 170
0
419 537
493 158
407 924
7 164
17.6
1 363
2.2
3 254
7.9
0
2500
5000KM


PLANET:
EARTH
LAND AREA
14 894 MILLION HECTARES
POPULATION
7,125 BILLION PEOPLE
DENSITY
13.7/KM²
FIG. 1D.07
RUSSIA
ALY
CHINA
PACIFIC
SAUDI
ARABIA
INDIA
SOUTH
WEST
ASIA
8 240 598
SOUTH
AFRICA
5 492 170
451 839
2 815
6.7
2 738
8.9
566
1.7
1 807
6.2
+ ANNUAL FIGURES FOR 2010

NATIONAL RESOURCES & INFRASTRUCTURE

Sprawling cities and a natural resource based economy makes South Africa one of the highest global contributors of per capita carbon emissions. Transportation accounts for over 55% of the country's overall energy consumption, with private vehicles consuming over 90% of transport fuels in urban centres. The primary catalyst of this fossil fuel dependency is South Africa's highly irregular urban density sprawl. A devastating consequence of Apartheid planning across the country.

The map diagrams South Africa's primary energy sources and distribution network. The sparse nature of this supply line reflects the county's ever-expanding suburban landscape. Eighty-eight percent of South Africa's electricity is produced from coal in the north east of the country, which is then distributed via the national grid. This single source, single region dependence is indicative of the country's fragile energy infrastructure. Crude oil is derived from the Middle East (82%) and West Africa (18%) at South Africa's primary port cities. This dependency of Arabian fuel ahead of local African suppliers further exacerbates the country's energy footprint.

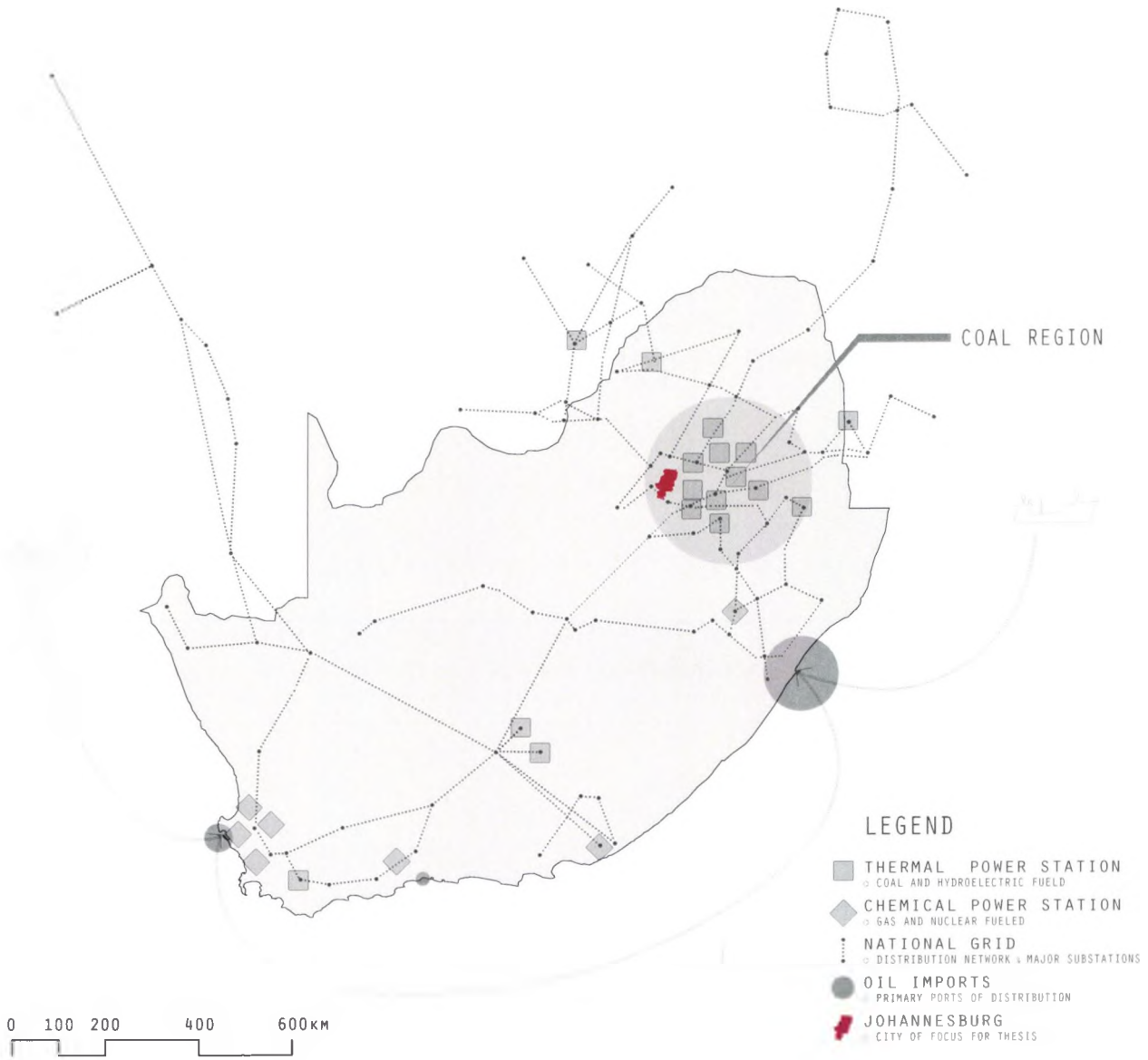
COUNTRY:
SOUTH AFRICA

LAND AREA
121 MILLION HECTARES

POPULATION
53 MILLION PEOPLE

DENSITY
42.4/KM²

FIG. 1D.08



PROVINCIAL ARTERY NETWORK

The map reflects the sprawling nature of South Africa's densest province, Gauteng. At such a scale, population growth and density can be understood from the artery network itself.

When reading the map it becomes difficult to differentiate between the northern administrative city of Pretoria from the southern economic powerhouse of Johannesburg. This is due to the emergence of major edge cities in recent years which have formed along the primary connective arterial, the Ben Schoeman Highway (N1). Private vehicles consume 95% of transport fuels within the province as state-run public transport struggles to support the growing urban sprawl. The only evident infrastructure that responds to Gauteng's multifaceted streetscape are the fuelling stations themselves.

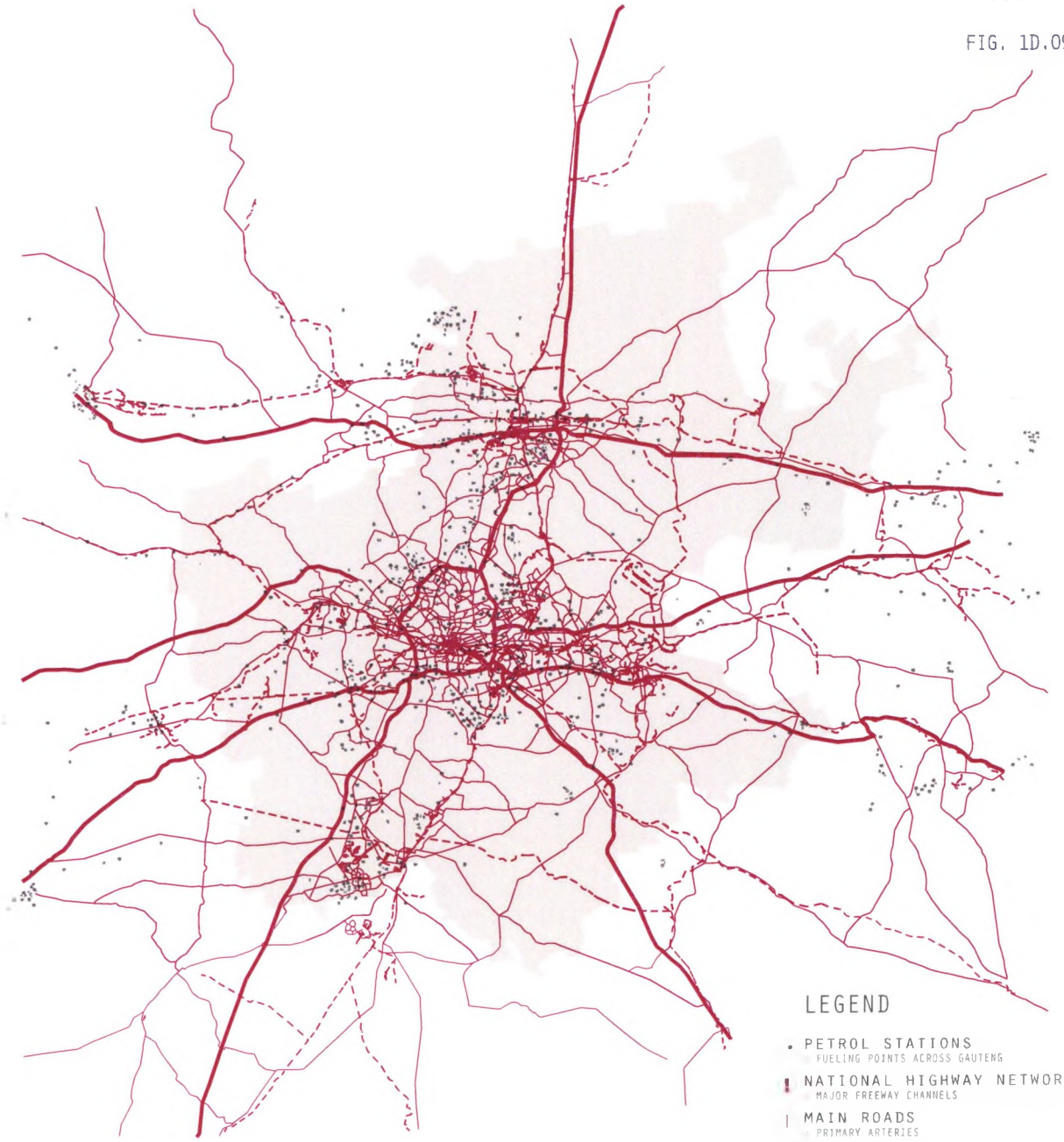
PROVINCE:
GAUTENG

LAND AREA
1,8 MILLION HECTARES

POPULATION
12,9 MILLION PEOPLE

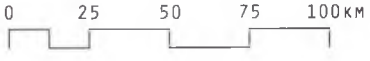
DENSITY
680/KM²

FIG. 1D.09



LEGEND

- PETROL STATIONS
  - FUELING POINTS ACROSS GAUTENG
- NATIONAL HIGHWAY NETWORK
  - MAJOR FREEWAY CHANNELS
- MAIN ROADS
  - PRIMARY ARTERIES
- RAILWAY SYSTEM
  - PROVINCIAL TRAIN NETWORK
- GAUTENG
  - PROVINCE OF FOCUS FOR THESIS



MOBILITY DECLINE WITHIN THE CITY

The map reflects the transport component of energy consumption per capita across Johannesburg. The underlay illustrates the intricate electricity distribution network connecting the city's substations.

The energy amount (in kWh) used for transport is represented by the possible travel distance equivalent in an average sized sedan. If this transport component of energy consumption remains constant, the map projects a significant decline in urban mobility as the price of fuel increases. This is bound to have a drastic effect on the city's development as Johannesburg has become increasingly reliant on its private transportation network, which makes up for 65% of the city's total energy consumption.

CITY:
JOHANNESBURG

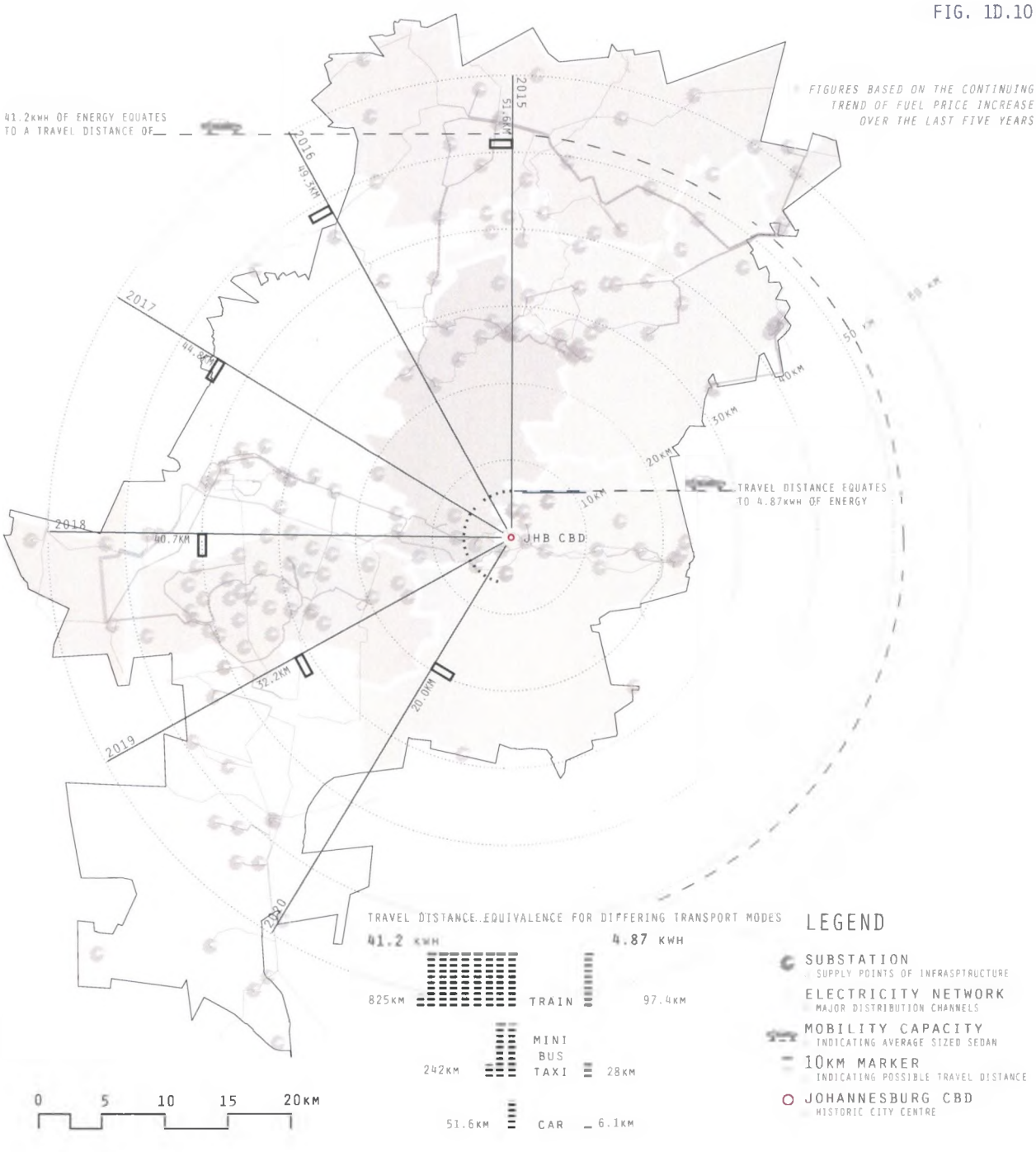
LAND AREA
164,500 HECTARES

POPULATION
3.6 MILLION PEOPLE

DENSITY
2,900/KM²

FIG. 1D.10

FIGURES BASED ON THE CONTINUING TREND OF FUEL PRICE INCREASE OVER THE LAST FIVE YEARS



02
CONTEXT

e. Urban Framework

i. Halfway House
between old pretoria road & N1 highway..p/ 78

ii. New Road
the sole east-west connector.....p/ 84

iii. Interchange
a space of intersection & interface....p/ 92

f. Contextual Analyses

i. Historical Landscape
from pause to rapid development.....p/104

ii. Natural Landscape
the disappearing highveld.....p/110

iii. Transit Landscape
assessing viability.....p/116

g. Site Significance

i. Inaccessibility:
a contextual photo essay.....p/128

ii. Narratives of Place:
revealing anonymity of space & use.....p/136

PART E

URBAN FRAMEWORK

FIG. 2E.01

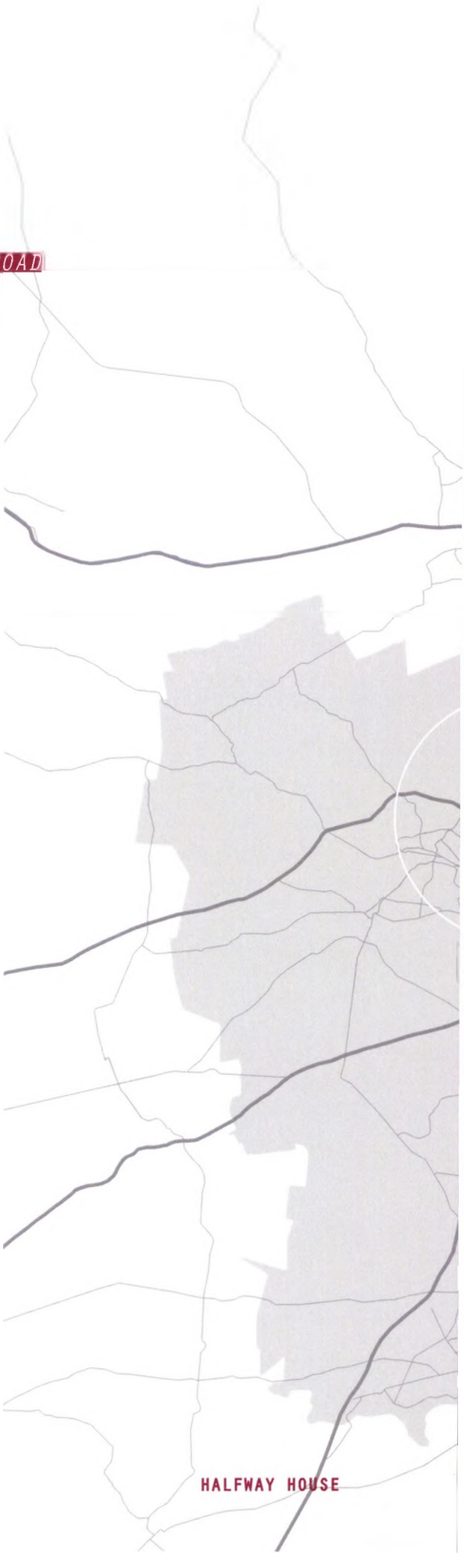
HALFWAY HOUSE

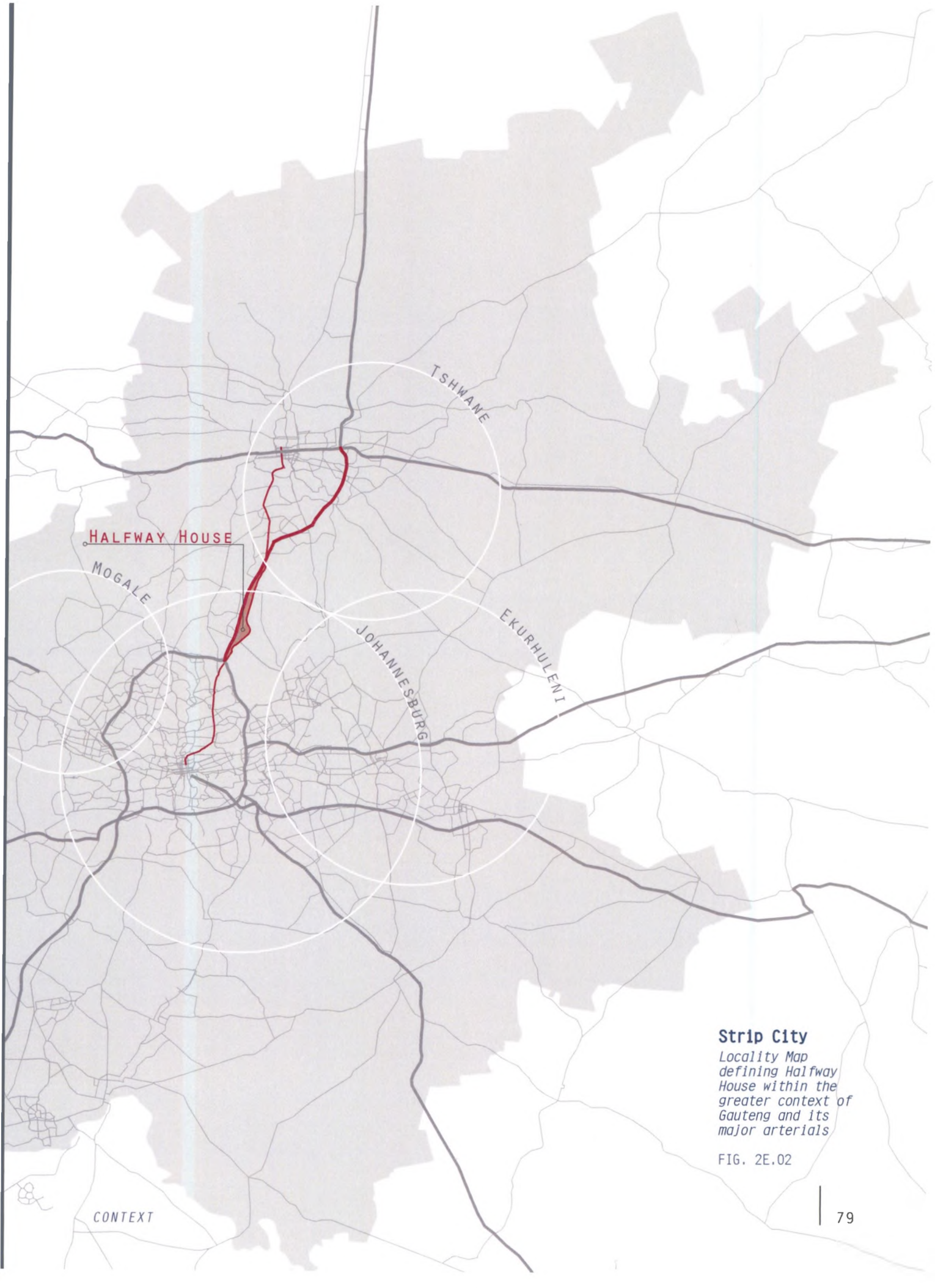
CAUGHT BETWEEN OLD PRETORIA ROAD & THE BEN SCHOEMAN HIGHWAY

The landscape between Johannesburg and Pretoria is a complex one, full of contrasts and contradictions. Halfway House is Midrand's historic industrial and commercial centre, bound by two arteries built almost a century apart.

This strip of land within Midrand has developed into South Africa's foremost matured edge city. With 'Rand' meaning 'Edge' in colonial Dutch, 'Midrand' translates to 'centre of the edges.'

Midrand has emerged as a new form. The edge city, not centred on a central nod but a continuous urbanised territory spanning 20 kilometres along the Ben Schoeman Highway.





Strip City

Locality Map defining Halfway House within the greater context of Gauteng and its major arterials

FIG. 2E.02


BLUE VALLEY
COUNTRY VIEW
NOORDWYK
GLEN AUSTIN
CARLSWALD
KYALAMI ESTATE
VORNA VALLEY
WATERFALL ESTATE - RESIDENTIAL + COMMERCIAL
PRESIDENT PARK
COMMERCIA
WATERFALL ESTATE - INDUSTRIAL
KLIPFONTEIN
HALFWAY HOUSE

ALONG A SPACE OF BUFFER

Emblematic of is context, there lies a discontinued mine at the southern Johannesburg extremity and the National Mint at the northern administrative-orientated extremity. The site of focus sits between these points, at an intersection at the heart of Halfway House. Halfway House is located between the Allandale Road and Olifantsfontein Road interchanges.

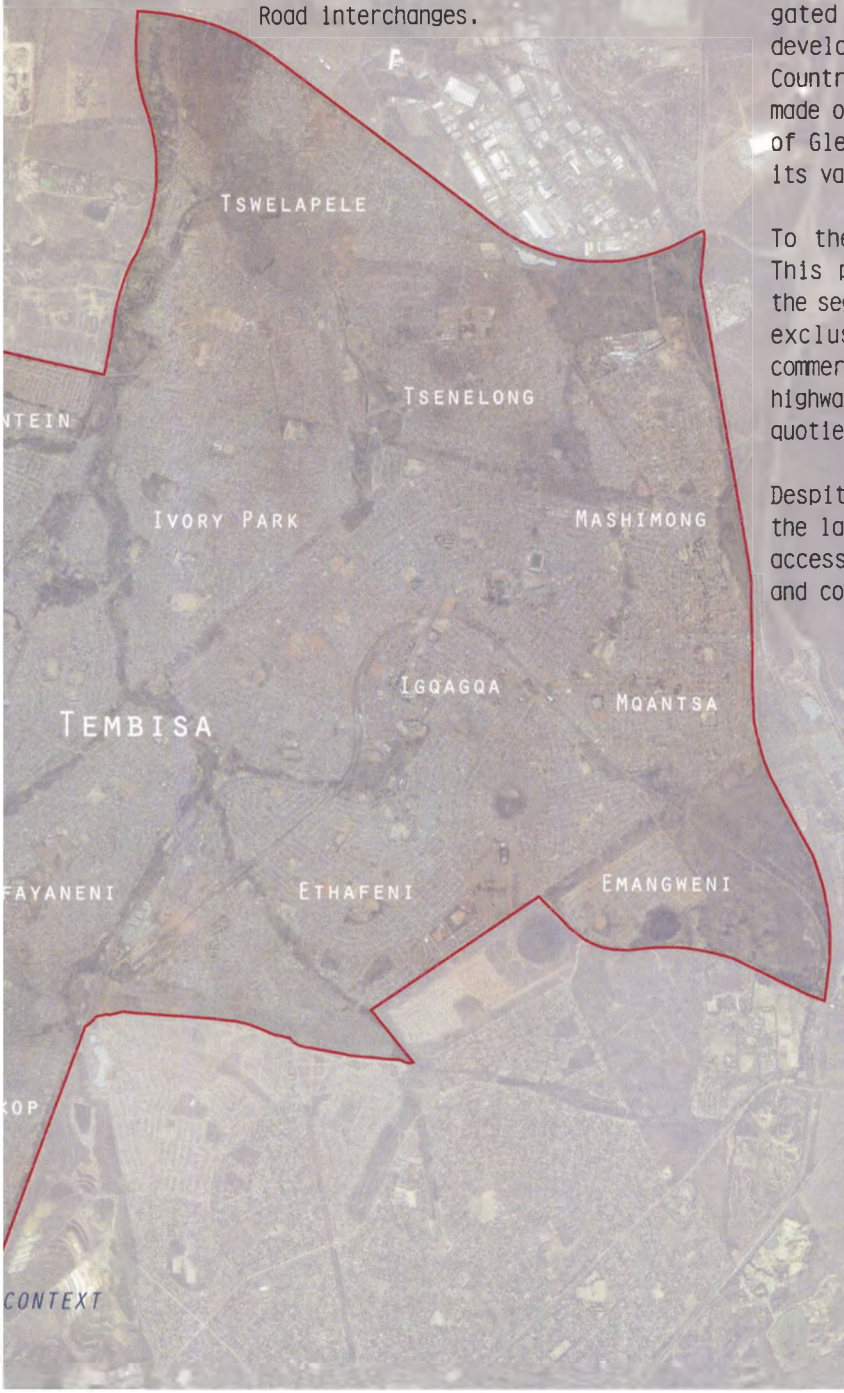
It was from this aptly named area that Midrand was established as a separate municipality and rapidly grew.

The landscape has become increasing socially segregated over time, making use of Halfway House as a space of buffer.

To the west lies a multitude of new gated housing estates and townhouse developments, such as Blue Valley and Country View. While the eastern end is made of the low income buffering suburb of Glen Austin adjacent to Tembisa and its various districts.

To the south lies Waterfall Estate. This private development perpetuates the segregated condition by constructing exclusive schools, hospitals, and commercial hubs on the one side of the highway, while increasing the industrial quotient on the other.

Despite the harsh barriers imposed on the landscape, the chosen site marks an accessible centre for these isolating and contrasting areas.



A Space of Buffer

Contextualizing Halfway House within greater Midrand

FIG. 2E.03

NEW ROAD

THE SOLE EAST-WEST CONNECTOR

The Ben Schoeman Highway provided a direct north-south link between Johannesburg and Pretoria. Halfway House has developed along this arterial, with the highway bisecting the built form.

New Road provides the sole east-west connector in this north-south orientated Halfway House, which is bound between the Allandale Road and Olifantsfontein Road interchanges. As a result, this arterial provides a critical accessible link. However, its popularity means that New Road's traffic rate ranks amongst the slowest in Gauteng.

FIG. 2E.05

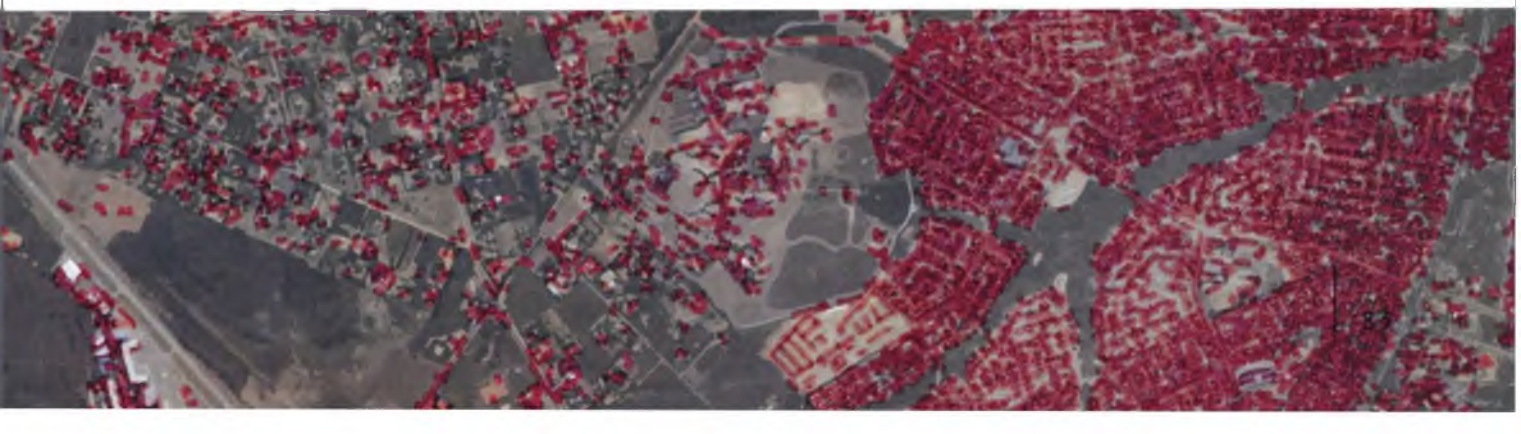
POINTS OF TRANSIT

The following analytical map visually represents walkability with Halfway House. With 400m being the internationally accepted standard of a 10 minute walk, this diagram used point attactors to map out the existing transportation infrastructure. This includes bus stops, taxi ranks, as well as the local airport and train station.

Density Across the Landscape

Measuring population density laterally through Halfway House (1 dot=10 people)

FIG. 2E.06



Horizontal Link

New Road provides the critical east-west connector in a north-south focused landscape

FIG. 2E.07

SCALING HALFWAY HOUSE

This visual analysis uses New Road as a datum to explore the contrasts of scale and functionality of Halfway House. Here, the author isolates the different conditions existing along a 2km stretch of New Road. These frames are then represented in mutual comparison according to a consistent scale. The landscape of this area is complex, containing an array of competing conditions.

INDUSTRIAL CONDITION

RESIDENTIAL DEVELOPMENTS

HIGHWAY INTERCHANGE


SUBURBAN
CONDITION


RETAIL
COMPLEXES


MULTI-TRANSIT
INFRASTRUCTURE

FIG. 2E.08

ARC OF MOBILITY

Clearly marked are three contrasting land parcels that have developed on either side and in between of the Ben Schoeman Highway that runs through the centre, and Old Pretoria Road as well as the parallel Gautrain line.

Mobility is at the essence of New Road, which runs perpendicular to these primary artery systems. An arc of transportation exchange runs from the taxi rank at the southern end of New Road to the site of focus, which sits at the highway interchange. This bisects the Midrand Gautrain Station, Grand Central Airport, a strip of private vehicle manufacturers, and an inter-city bus terminal.

An Axis for Mobility

New Road provides the datum from which an array of isolated transit infrastructures connect

FIG. 2E.09


NISSAN

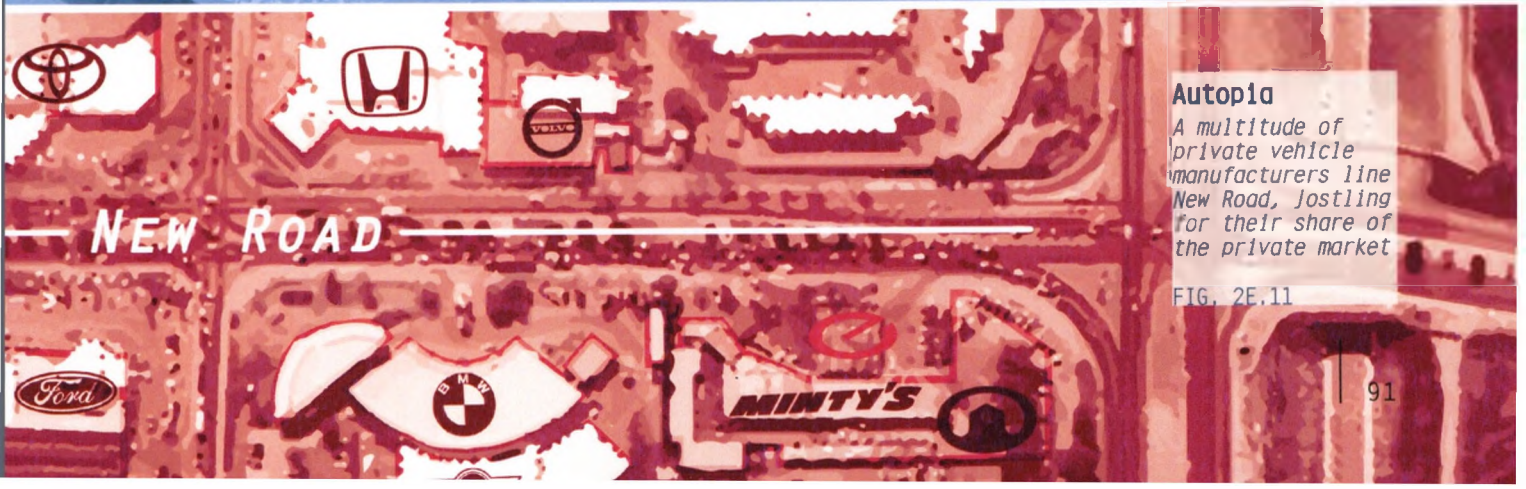
BREAKING DOWN THE BOUNDARIES OF MOBILITY

These various forms of mobility exchange are currently organised in a strict hierarchical fashion, defining a strict rule of accessibility control. It is the intention of this project to act as the catalytic agent breaking down this established hierarchy.

Democratizing Mobility

Superimposing two contrasting socioeconomic transit systems along New Road's arc of mobility

FIG. 2E.010



Autopia

A multitude of private vehicle manufacturers line New Road, jostling for their share of the private market

FIG. 2E.11

INTERCHANGE

A SPACE OF INTERSECTION & INTERFACE

Despite being the sole east-west corridor, the site acts as an infrastructural buffer. Barriers such as the embankments and traffic flow force pedestrian movement over the site's retaining walls and across the Jozi Diner, which today primarily functions as a pedestrian bridge. In addition to facilitating traffic flow, the interchange operates as a highway fuel station, and a major inter-city bus terminal.

The Overhead & the In-between

Perspective of the site from the south-east embankment

FIG. 2E.12


drop-off
bus termina
north-bound
fueling station
New Road towards Kyalami
Johannesburg
94

Pretoria

Ben
choeman
ighway
(N1)

New Road towards Tembisa

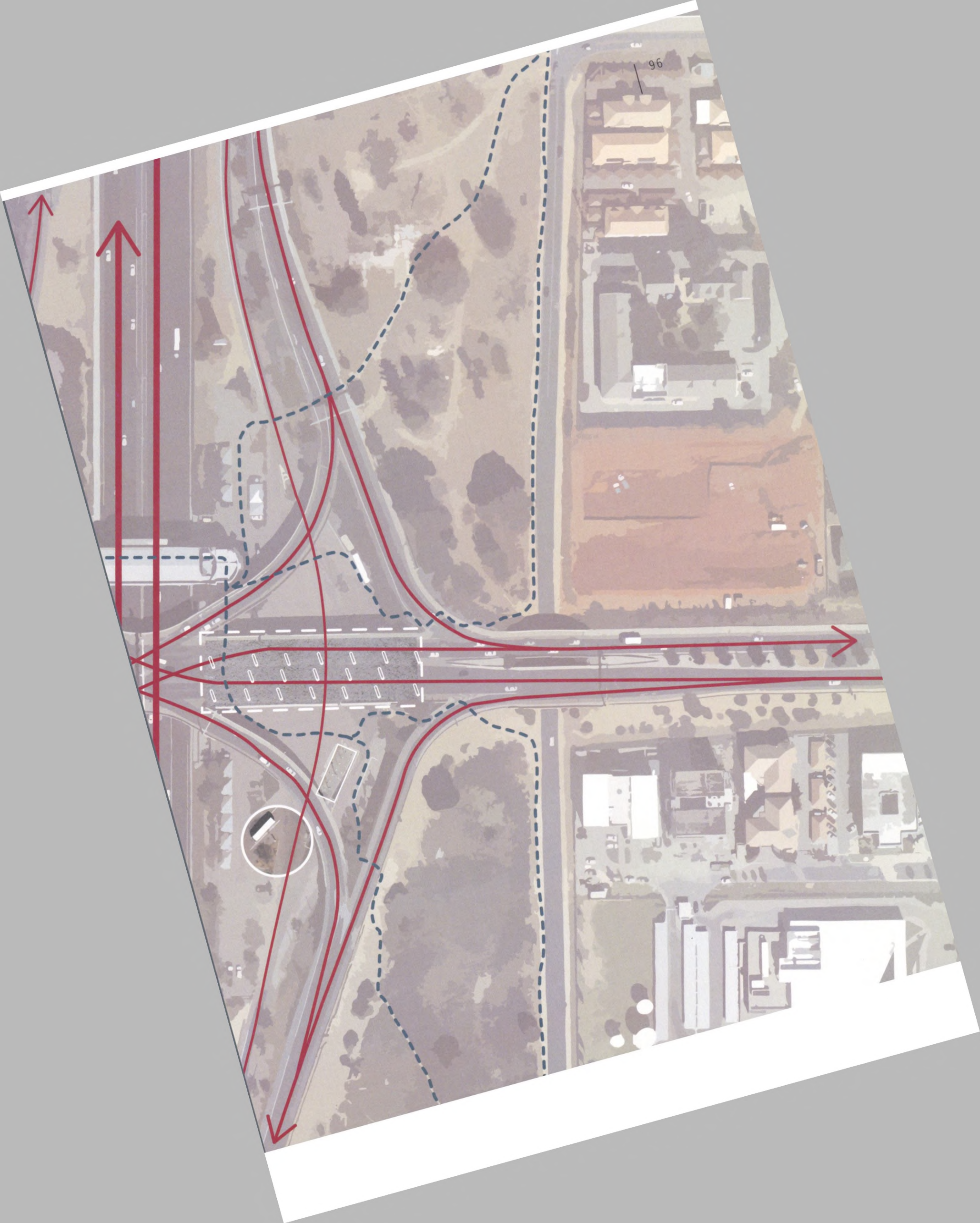
south-bound
fueling station

pick-up
bus terminal

Site Elements

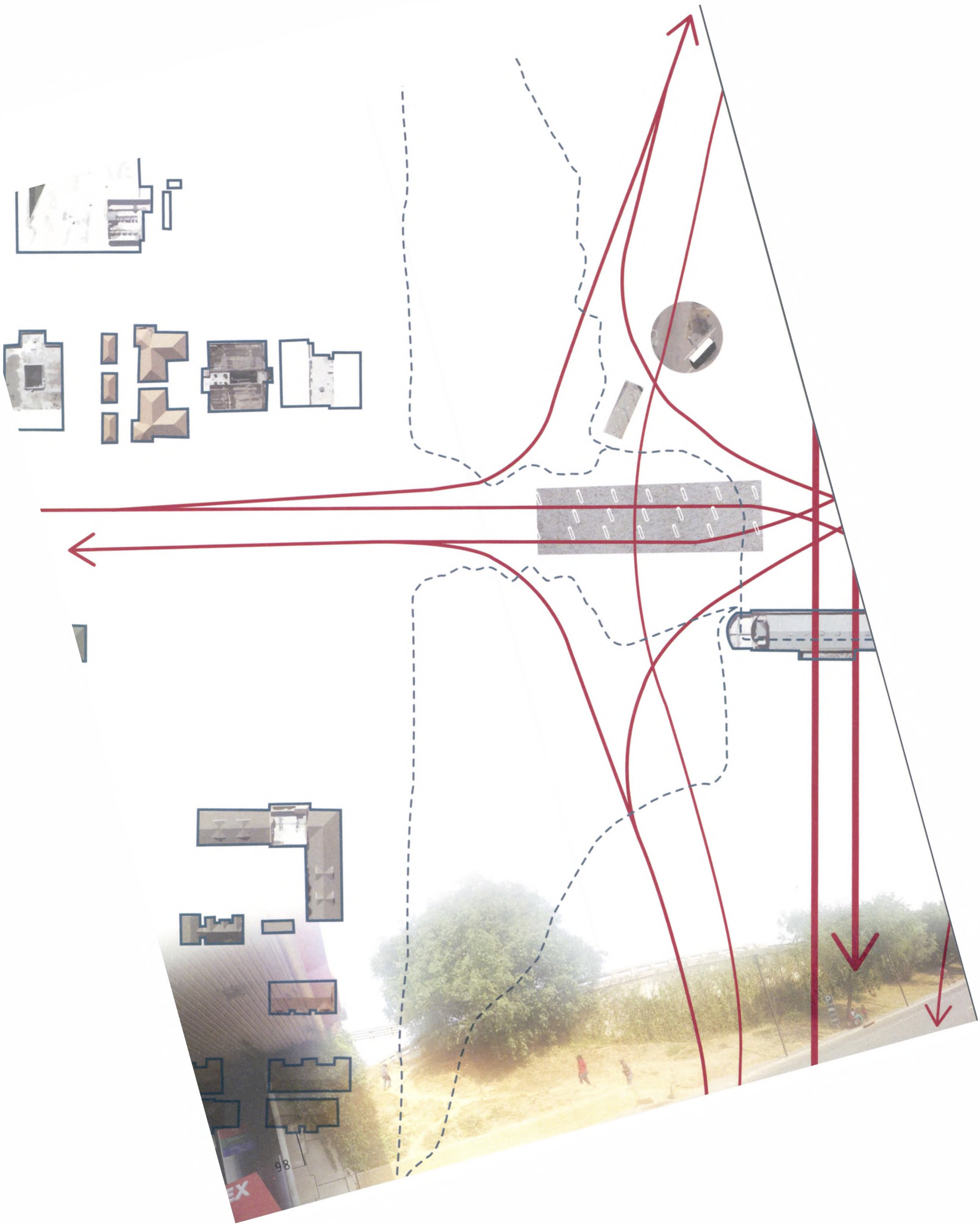
Identifying the key static elements of the site in relation to the built context

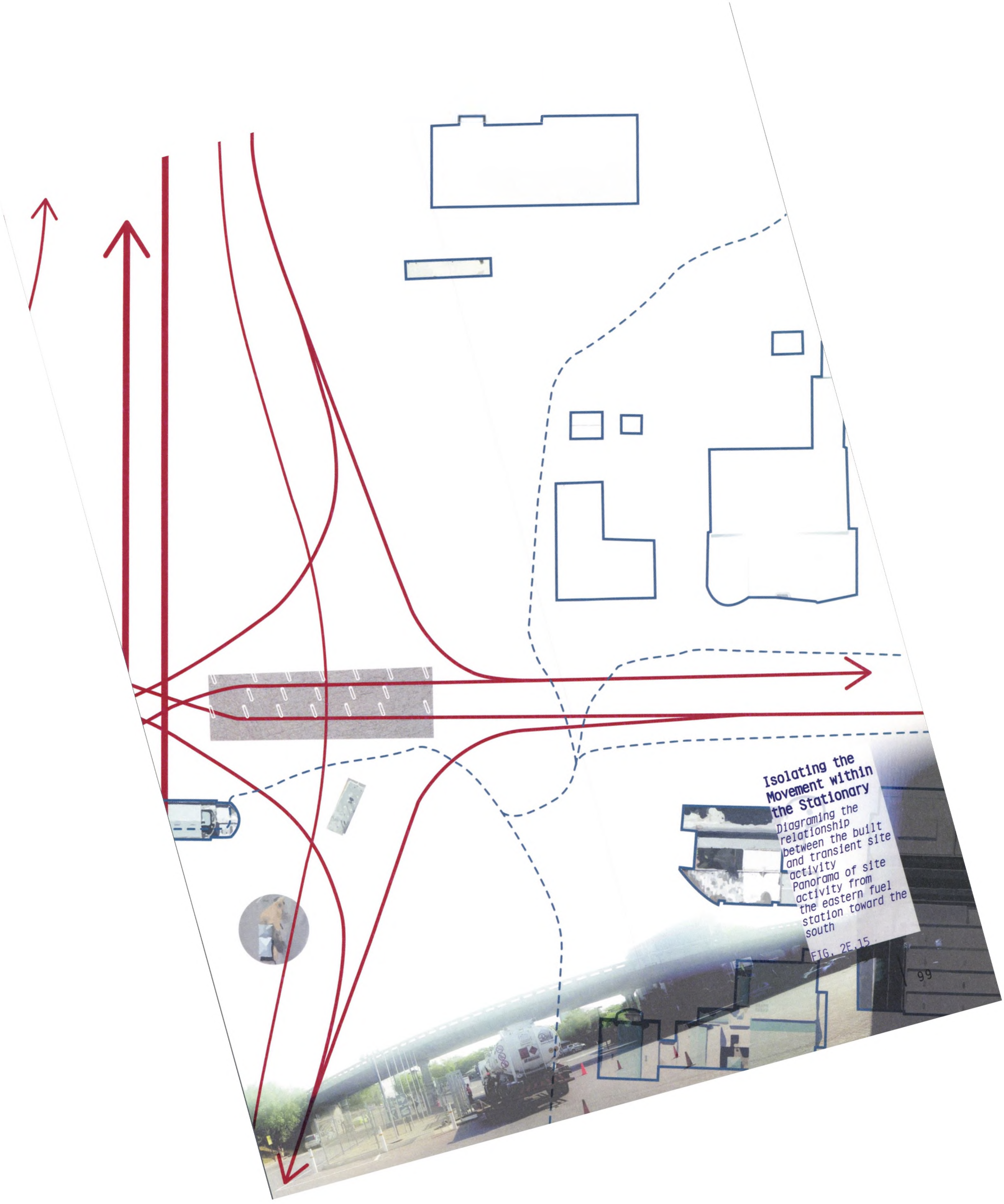
FIG. 2E.13


96


Tracing
Pathways
Analyzing the primary vehicular and pedestrian routes that transverse the interchange

FIG. 2E.14




Isolating the Movement within the Stationary
Diagraming the relationship between the built and transient site activity
Panorama of site activity from the eastern fuel station toward the south
FIG. 2E.15

SITE CONDITIONS

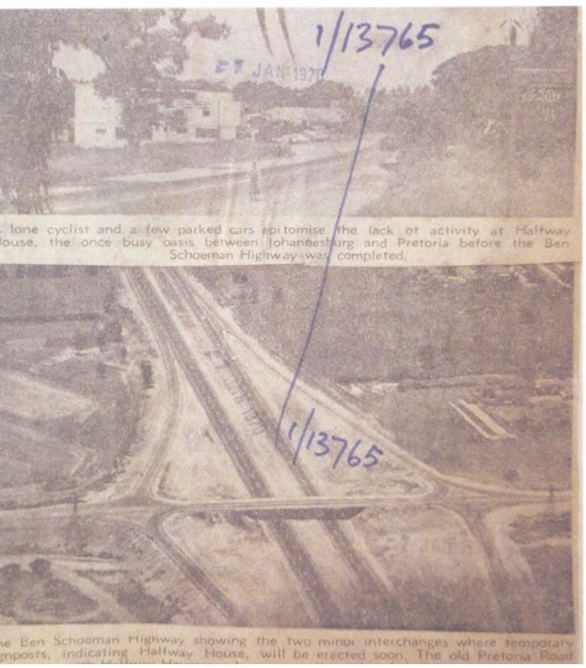


FIG. 2F.01

PART F

CONTEXTUAL ANALYSES

Lost in Scale

Aerial of the New Road interchange (above)

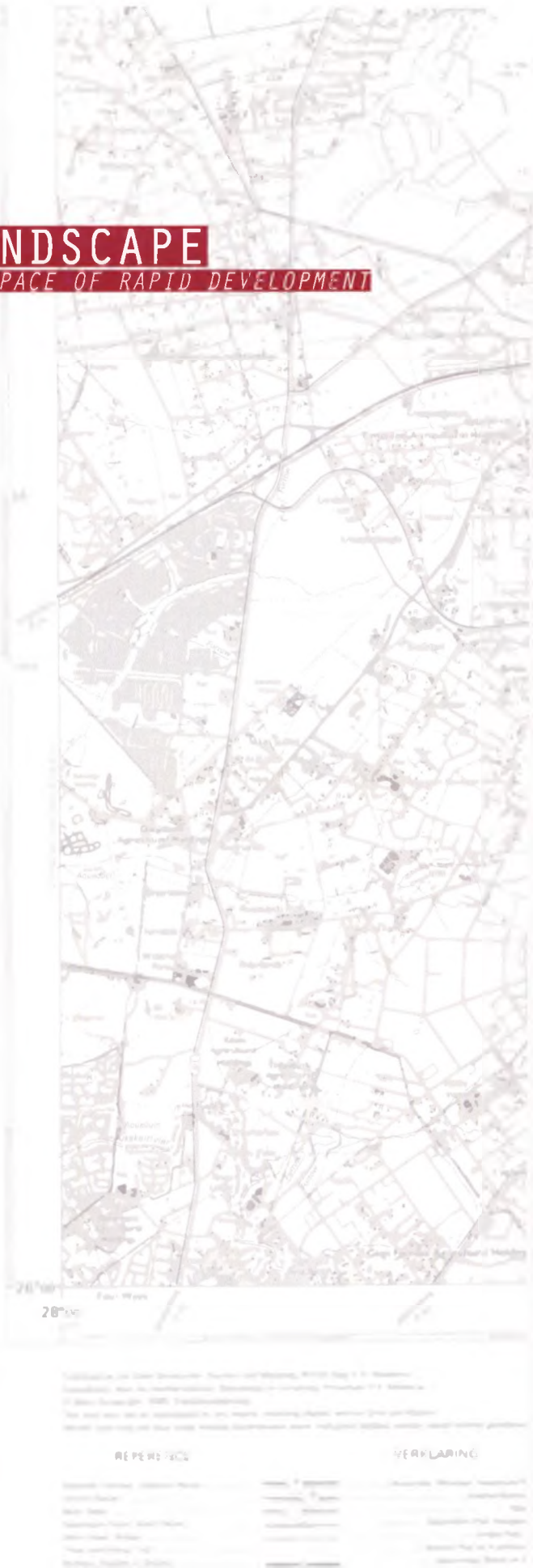
South-east quadrant of the site from the existing informal pedestrian path (below)

FIG. 2E.16
FIG. 2E.17

HISTORICAL LANDSCAPE

FROM PLACE OF PAUSE TO A SPACE OF RAPID DEVELOPMENT

Historically, the area has always shared a symbiotic relationship with roadway systems. Halfway House was aptly named as it served a point of rest for commuters in the pre-motorised era. Halfway House initially developed off of the sole arterial between the mining town of Johannesburg and the administrative centre of Pretoria 50km away. This road would become known as the R101, changing names from Old Johannesburg Road, to Old Pretoria Main Road, to Louis Botha Avenue along its length. The road also predates the city of Johannesburg and its current urban context. Sections of the road formed part of the original dirt track leading to the ZAR capital, Pretoria. The road also predates its urban context and was therefore influenced primarily by the natural environment; by the Witwatersrand ridges and the boundaries of existing farms and geographical features(Hart 2004, p.54). This arterial was also of strategic importance to the security of both cities. During the Anglo Boer South African War it was protected by the ZAR Government troops and the British Army (Shorten 1970, p.95). In 1968, the Ben Schoeman Highway was opened. Running parallel to Old Pretoria Main Road, it formed a new high-speed arterial. It was seen as the a major enabler of the country's economy, and today it marks the busiest stretch of road in South Africa. This innovation transformed Halfway House from place of pause to a space of rapid development. Promptly, industry developed between these primary arteries as the area became desirable for its highway proximity. In 1981, this growing urban context was established as a separate municipality and named Midrand, with the original epicentre remaining as Halfway House. At the beginning of the 21st century, it was incorporated into the City of Johannesburg (Hart 2004, p.107).

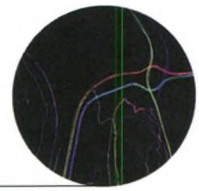


ALONG THE BEN SCHOEMAN HIGHWAY

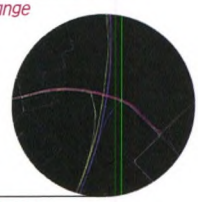
Charette Exploration

The charette mapping process attempts to illustrate the orbits, which currently dictate urban life. This is achieved through the manipulation of open-source GPS-traced mapping data, which is further coded to represent direction through the range of the colour wheel.

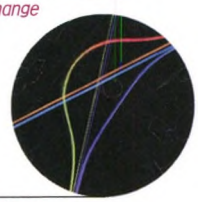
The Ben Schoeman Highway between Johannesburg and Pretoria is chosen as a precedent study. Initially, each interchange is isolated and traced. Secondly, the resultant diagrams are superimposed on one another before beginning a process of manual interpolation. This process, which is illustrated on the next page, attempts to reveal new orbitals from the existing configuration.



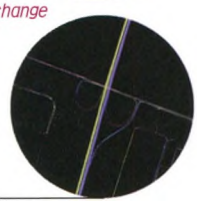
Eeufees Road Interchange
M7



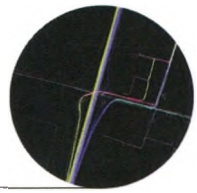
Lyttelton Ave Interchange
M34



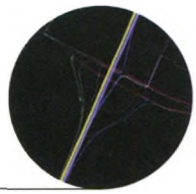
John Voster Dr Interchange
N14



Olifantsfontein Rd
R562



New Rd Interchange
M71

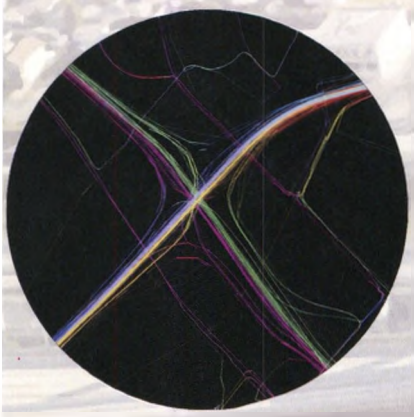


Allandale Rd Interchange
R551

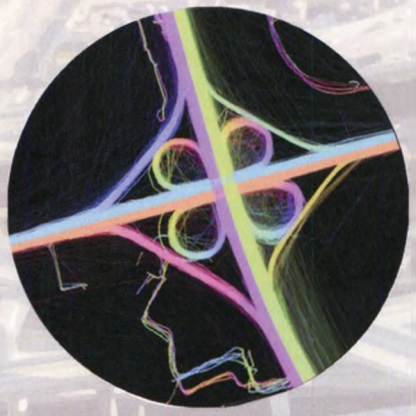
Western/Eastern Bypass
N3

FIG. 1D.04

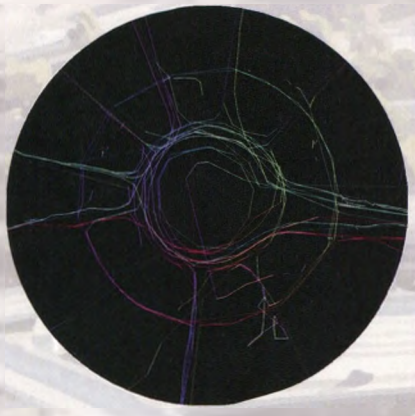
INTERNATIONAL PRECEDENTS



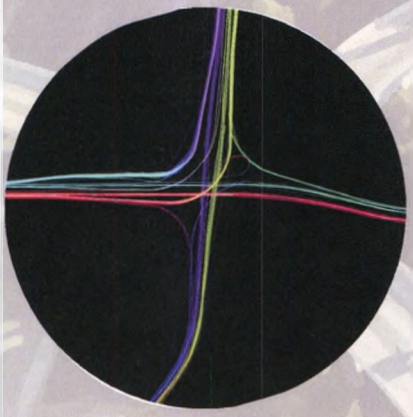
Bill Keene Memorial Interchange
LOS ANGELES



The Cloverleaf
MOSCOW

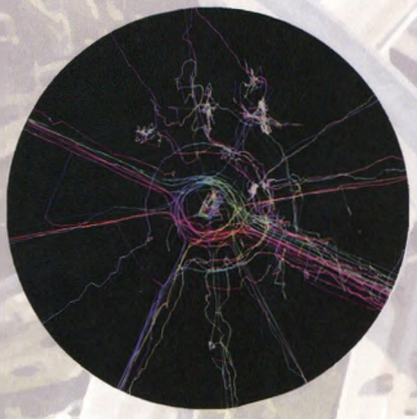


Judge Harry Pregerson Interchange
LOS ANGELES

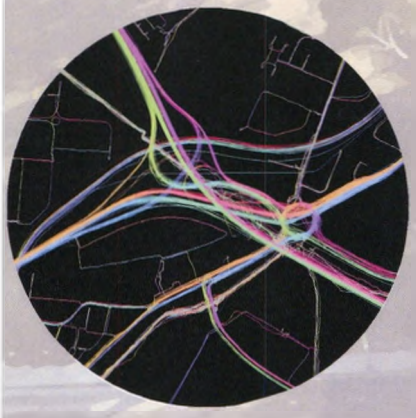


Place de la Nation
PARIS

I-287 and I-95
NEW YORK



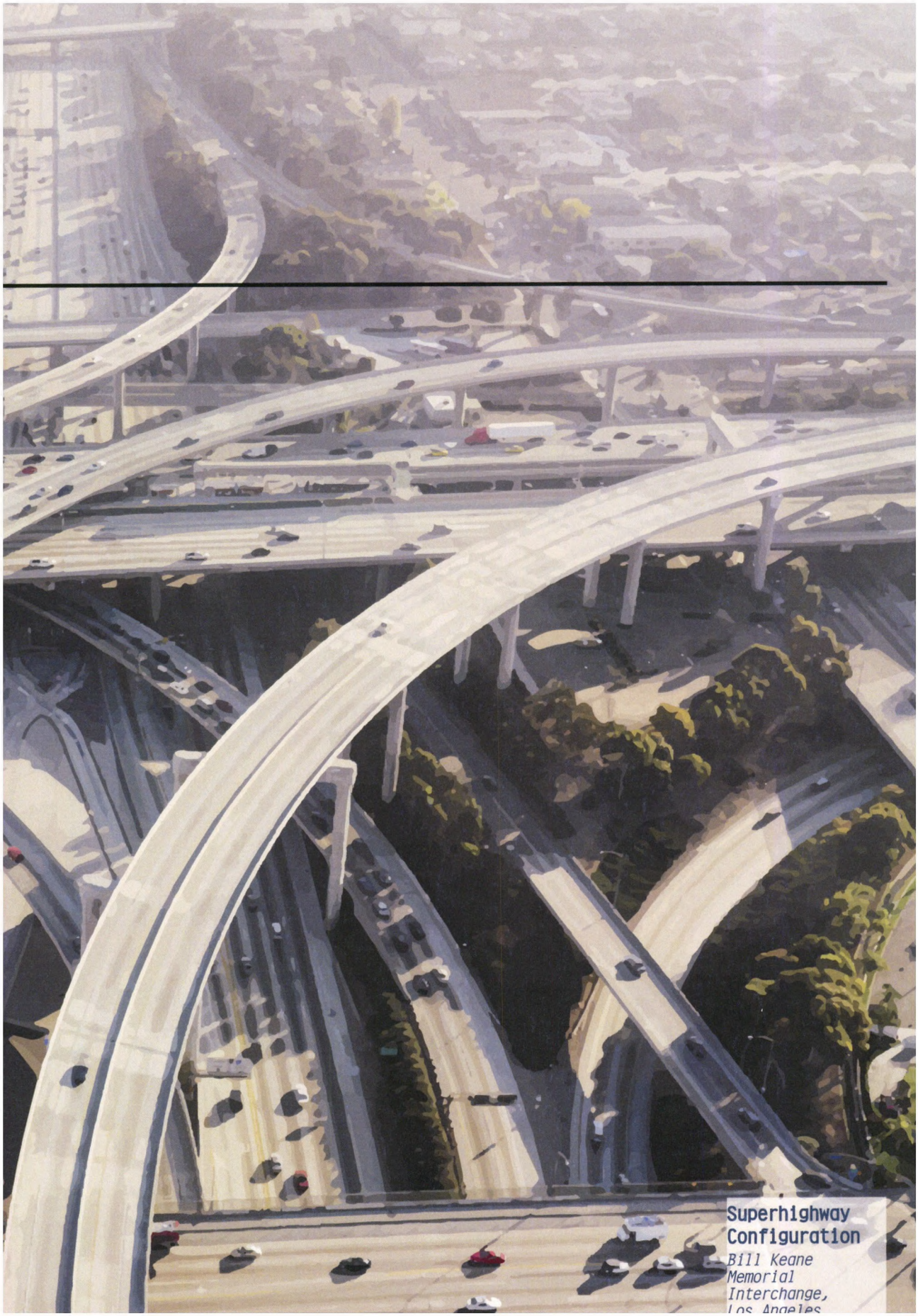
Arc de Triomphe
PARIS



Gravelly Hill Interchange
BIRMINGHAM

Breezewood I-70 Gap
PENNSYLVANIA

I-495 and I-95
NEW JERSEY

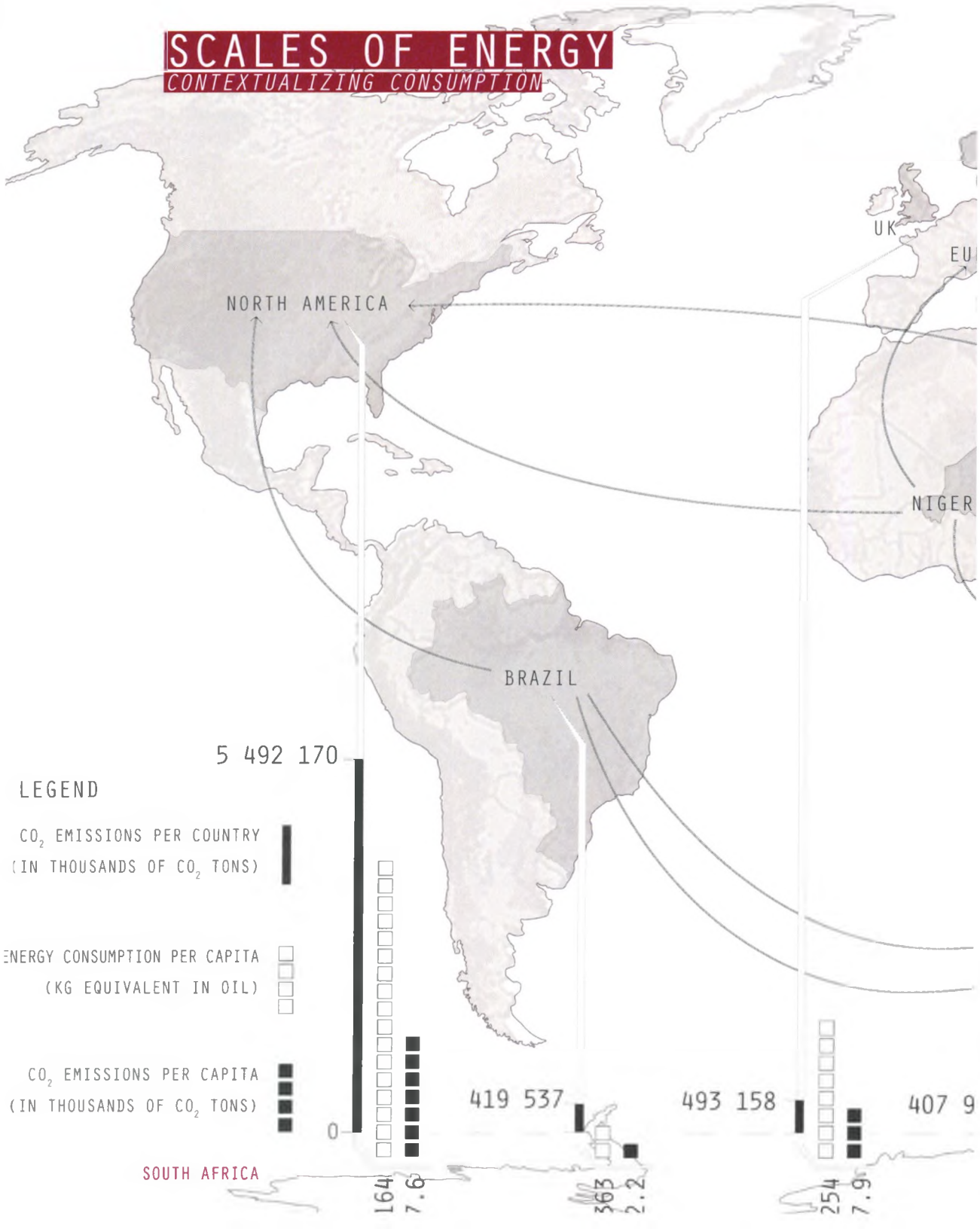


Superhighway Configuration

Bill Keane Memorial Interchange, Los Angeles

SCALES OF ENERGY

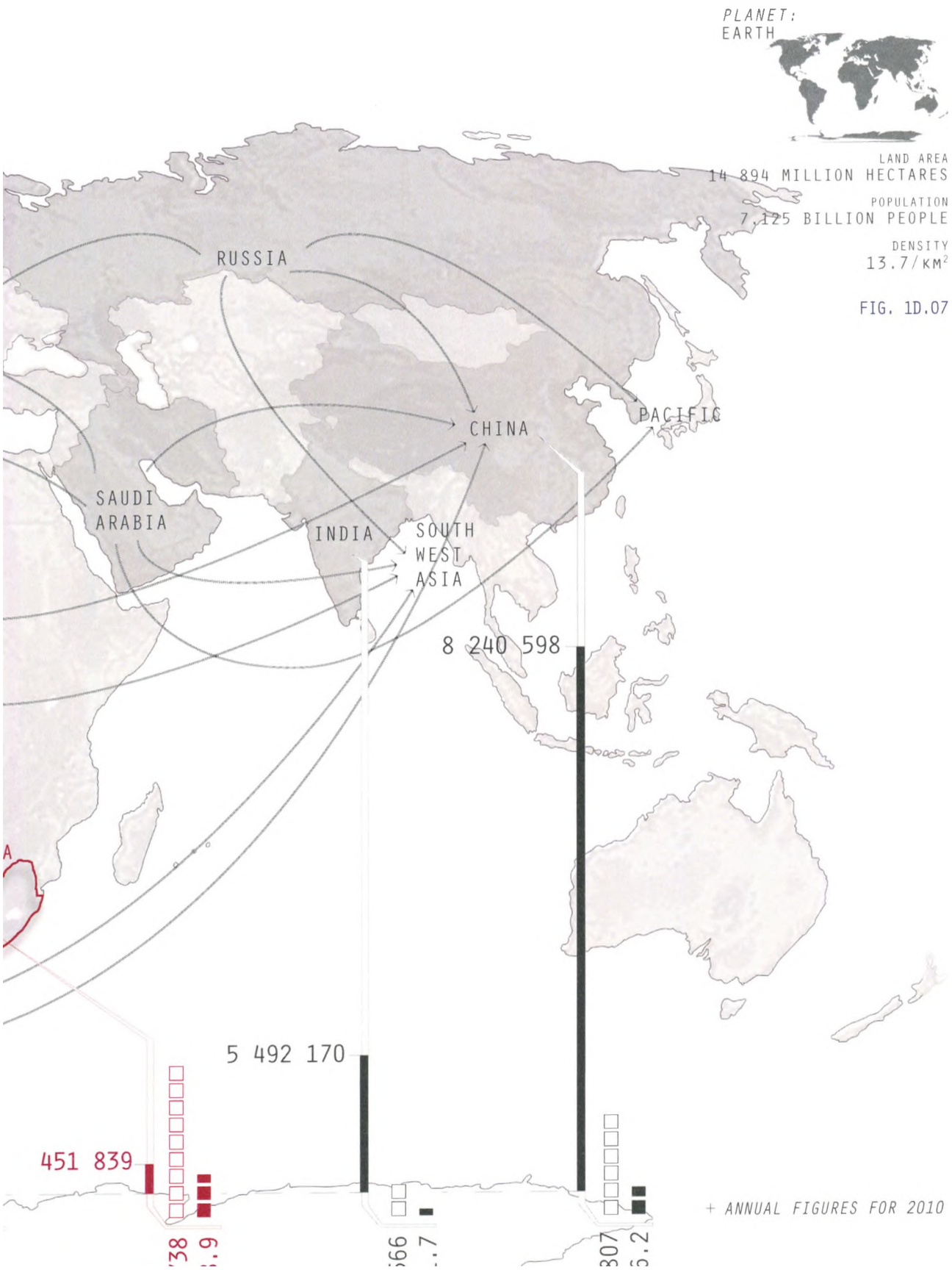
CONTEXTUALIZING CONSUMPTION



NATIONAL RESOURCES & INFRASTRUCTURE

Sprawling cities and a natural resource based economy makes South Africa one of the highest global contributors of per capita carbon emissions. Transportation accounts for over 55% of the country's overall energy consumption, with private vehicles consuming over 90% of transport fuels in urban centres. The primary catalyst of this fossil fuel dependency is South Africa's highly irregular urban density sprawl. A devastating consequence of Apartheid planning across the country.

The map diagrams South Africa's primary energy sources and distribution network. The sparse nature of this supply line reflects the county's ever-expanding suburban landscape. Eighty-eight percent of South Africa's electricity is produced from coal in the north east of the country, which is then distributed via the national grid. This single source, single region dependence is indicative of the country's fragile energy infrastructure. Crude oil is derived from the Middle East (82%) and West Africa (18%) at South Africa's primary port cities. This dependency of Arabian fuel ahead of local African suppliers further exacerbates the country's energy footprint.


PLANET:
EARTH
LAND AREA
14 894 MILLION HECTARES
POPULATION
7,125 BILLION PEOPLE
DENSITY
13.7/KM²
FIG. 1D.07
RUSSIA
CHINA
PACIFIC
SAUDI
ARABIA
INDIA
SOUTH
WEST
ASIA
8 240 598
5 492 170
451 839
+ ANNUAL FIGURES FOR 2010

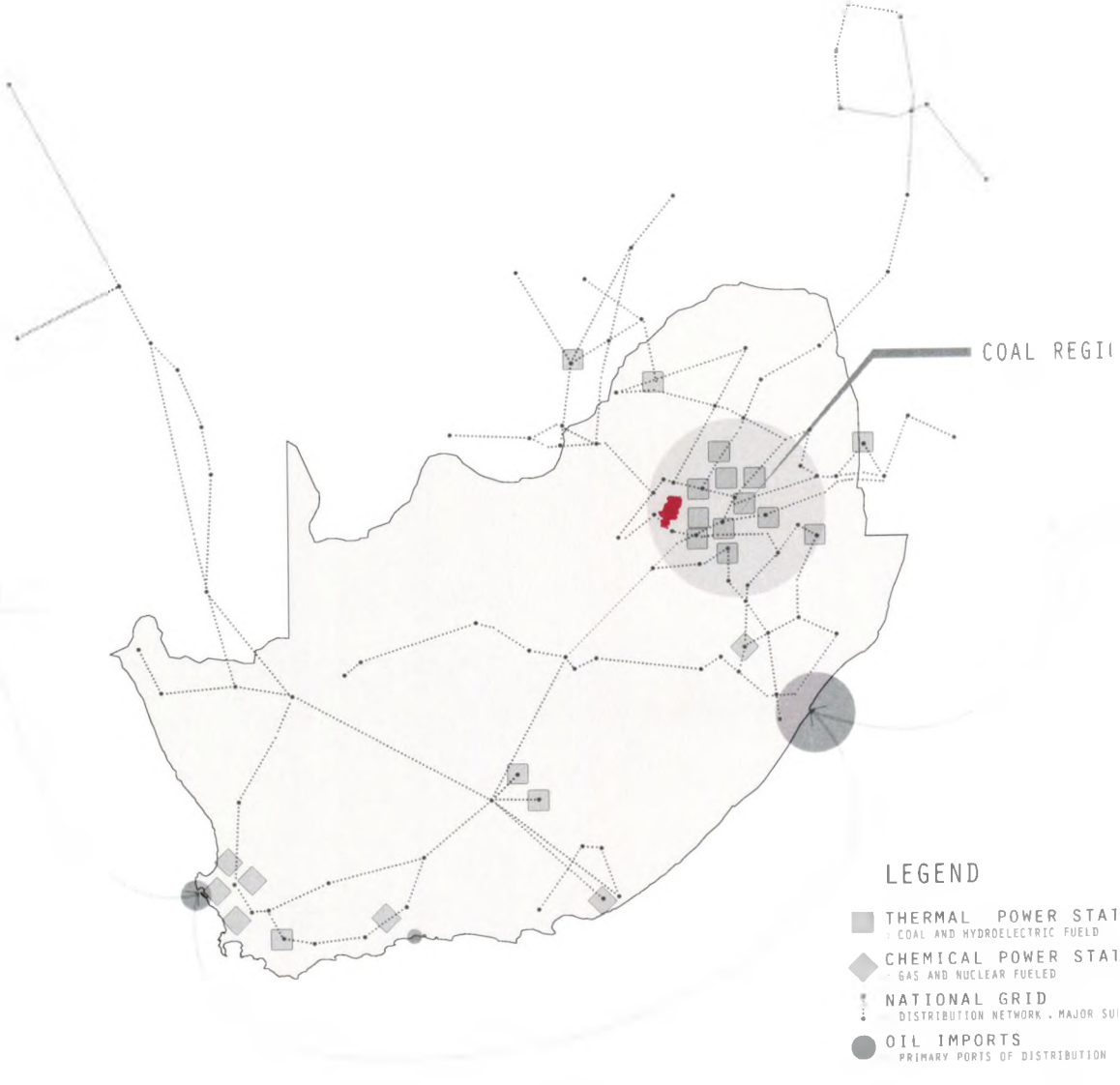
COUNTRY:
SOUTH AFRICA

LAN
121 MILLION HECT

POPU
53 MILLION PE

D
42.

FIG.



PROVINCIAL ARTERY NETWORK

The map reflects the sprawling nature of South Africa's densest province, Gauteng. At such a scale, population growth and density can be understood from the artery network itself.

When reading the map it becomes difficult to differentiate between the northern administrative city of Pretoria from the southern economic powerhouse of Johannesburg. This is due to the emergence of major edge cities in recent years which have formed along the primary connective fuels within the province as state-run public transport struggles to support the growing urban sprawl. The only evident infrastructure that responds to Gauteng's multifaceted streetscape are the fuelling stations themselves.

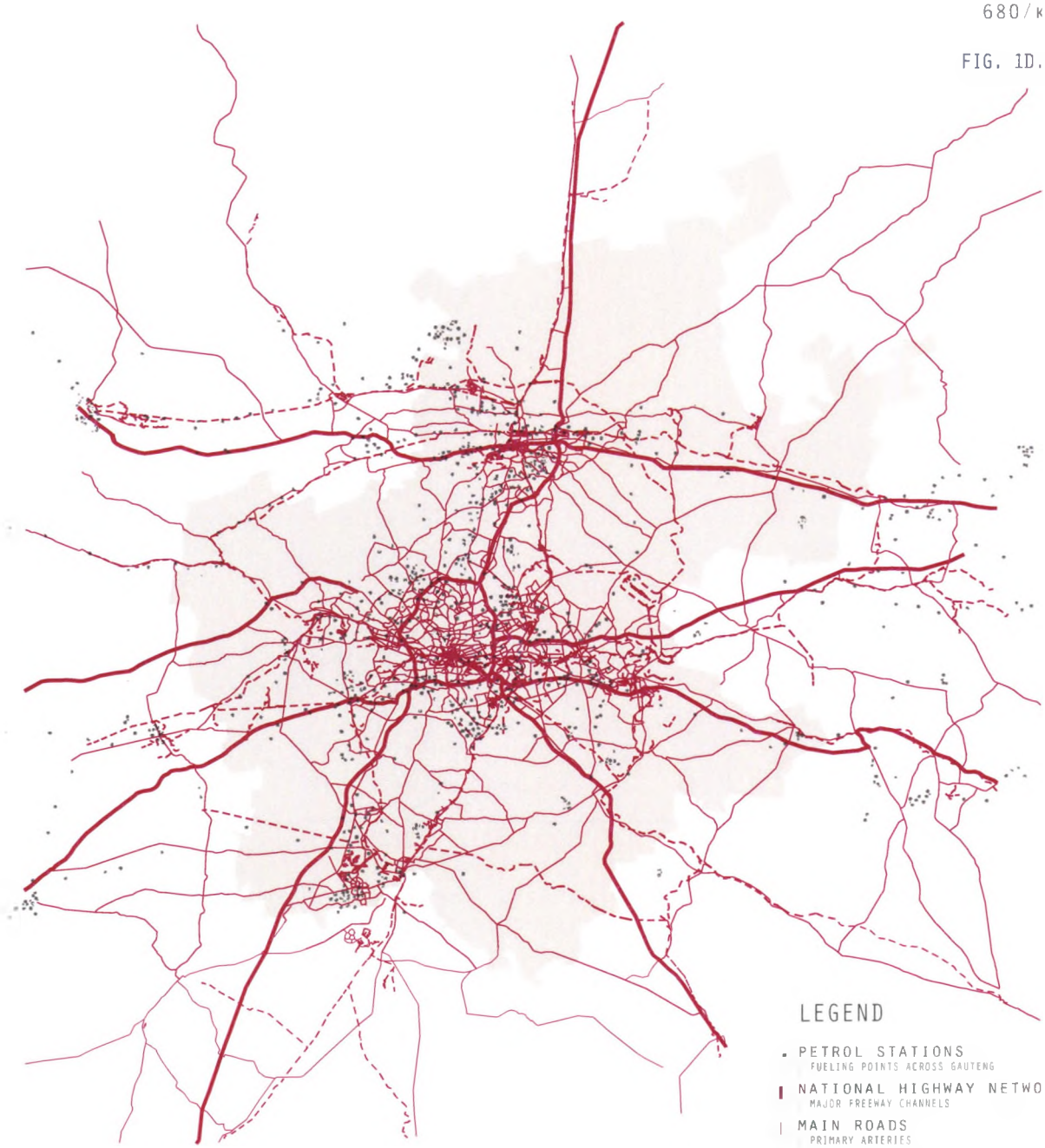
PROVINCE:
GAUTENG

LAND A
1,8 MILLION HECTAR

POPULAT
12,9 MILLION PEOP

DENS
680/k

FIG. 1D.



MOBILITY DECLINE WITHIN THE CITY

The map reflects the transport component of energy consumption per capita across Johannesburg. The underlay illustrates the intricate electricity distribution network connecting the city's substations.

The energy amount (in kWh) used for transport is represented by the possible travel distance equivalent in an average sized sedan. If this transport component of energy consumption remains constant, the map projects a significant decline in urban mobility as the price of fuel as Johannesburg has become increasingly reliant on its private transportation network, which makes up for 65% of the city's total energy consumption.

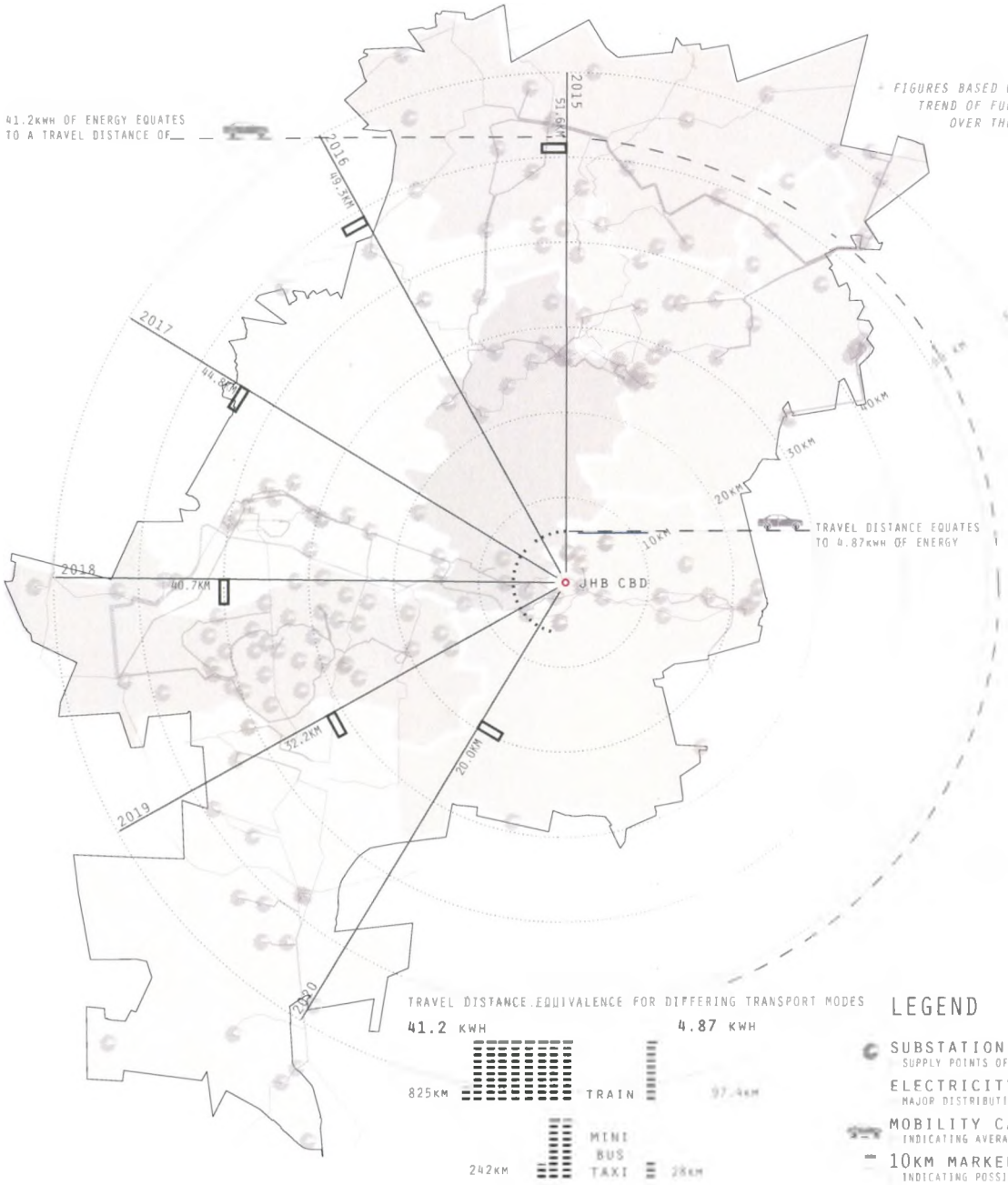
CITY:
JOHANNESBURG

LAND AREA
164,500 HECTARES

POPULATION
3.6 MILLION PEOPLE

DENSITY
2,900/KM²

FIG. 1D.10



* FIGURES BASED ON THE CONTINUING TREND OF FUEL PRICE INCREASE OVER THE LAST FIVE YEARS

LEGEND

- SUBSTATION
  SUPPLY POINTS OF INFRASPTRUCTURE
- ELECTRICITY NETWORK
  MAJOR DISTRIBUTION CHANNELS
- MOBILITY CAPACITY
  INDICATING AVERAGE SIZED SEDAN
- 10KM MARKER
  INDICATING POSSIBLE TRAVEL DISTANCE

PART E

URBAN FRAMEWORK

02
CONTEXT

e. Urban Framework

i. Halfway House
between old pretoria road & N1 highway..p/ 7

ii. New Road
the sole east-west connector.....p/ 8

iii. Interchange
a space of intersection & interface....p/ 9

f. Contextual Analyses

i. Historical Landscape
from pause to rapid development.....p/10

ii. Natural Landscape
the disappearing highveld.....p/11

iii. Transit Landscape
assessing viability.....p/11

g. Site Significance

i. Inaccessibility:
a contextual photo essay.....p/12

ii. Narratives of Place:
revealing anonymity of space & use.....p/13

HALFWAY HOUSE

CAUGHT BETWEEN OLD PRETORIA ROAD & THE BEN SCHOEMAN HIGHWAY

The landscape between Johannesburg and Pretoria is a complex one, full of contrasts and contradictions. Halfway House is Midrand's historic industrial and commercial centre, bound by two arteries built almost a century apart.

This strip of land within Midrand has developed into South Africa's foremost matured edge city. With 'Rand' meaning 'Edge' in colonial Dutch, 'Midrand' translates to 'centre of the edges.'

Midrand has emerged as a new form. The edge city, not centred on a central nod but a continuous urbanised territory spanning 20 kilometres along the Ben Schoeman Highway.


BLUE VALLEY
COUNTRY VIEW
NOORDWYK
GLEN AUSTIN
CARLSWALD
KYALAMI ESTATE
VORNA VALLEY
WATERFALL ESTATE
RESIDENTIAL + COMMERCIAL
PRESIDENT PARK
COMMERCI
WATERFALL ESTATE

Strip City

Locality Map defining Halfway House within the greater context of Gauteng and its maior arterials

FIG. 2E.04

ARTERIAL PROXIMITY

This analytical map visually represents building proximity to the site's arterial network. This is of high importance to the thesis project itself as these are the buildings that have the biggest impact on people's perception of their urban environment. They are the culprits of super scale.

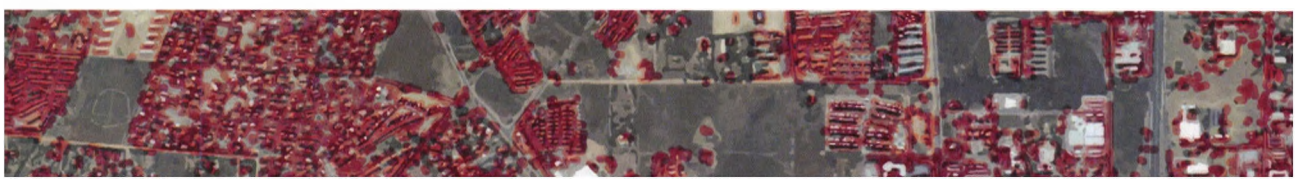


FIG. 2E.05

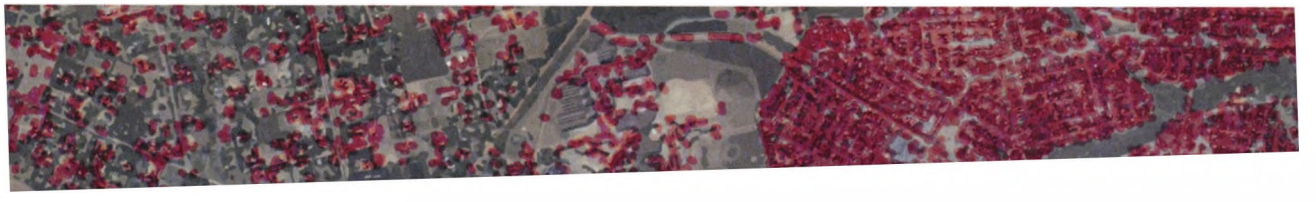
POINTS OF TRANSIT

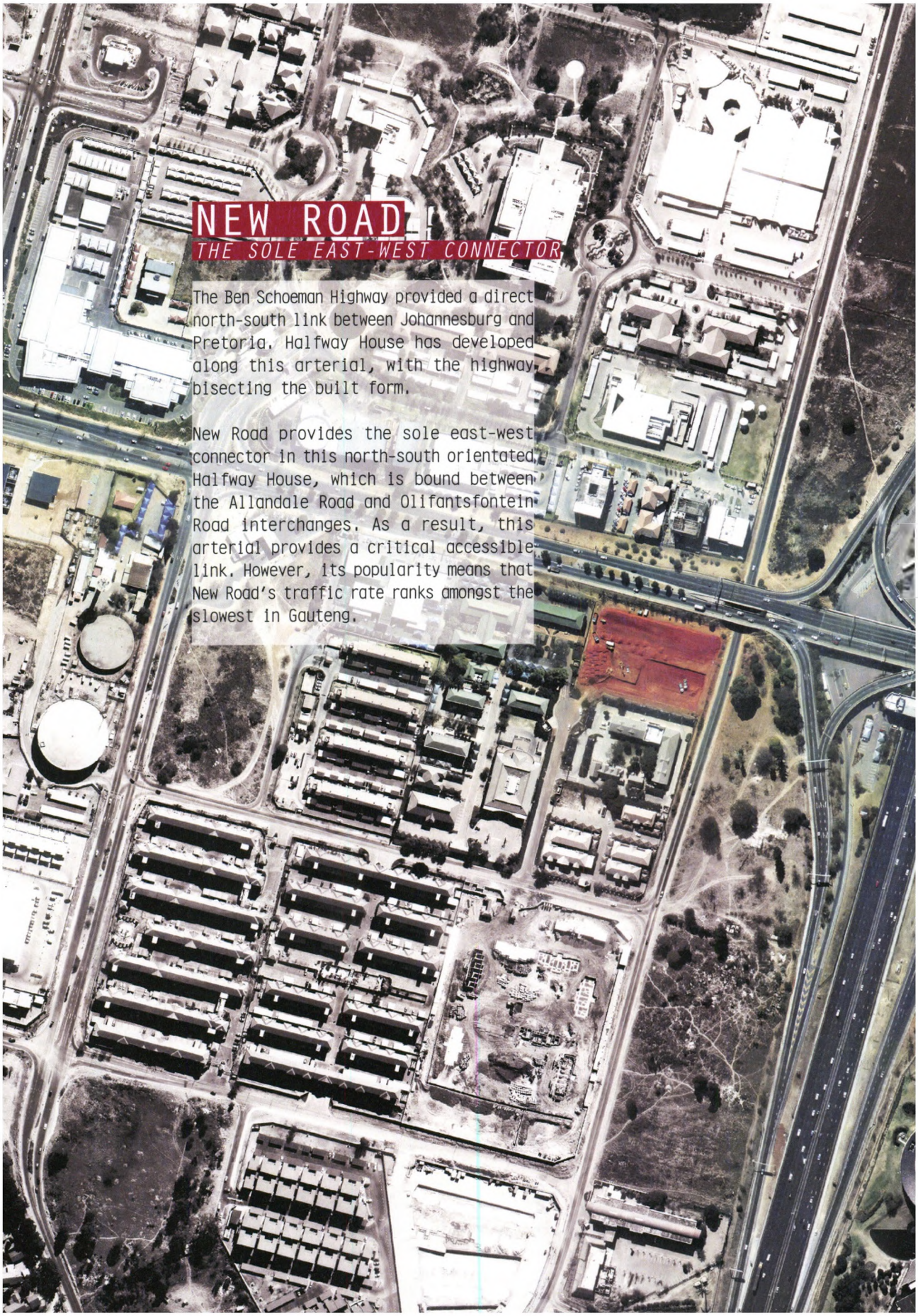
The following analytical map visua represents walkability with Halfw House. With 400m being the internationa accepted standard of a 10 minute wal this diagram used point attactors map out the existing transportati infrastructure. This includes bus stop taxi ranks, as well as the local airpo and train station.

Density Across the Landscape

Measuring population density laterally through Halfway House (1 dot=10 people)

FIG. 2E.06





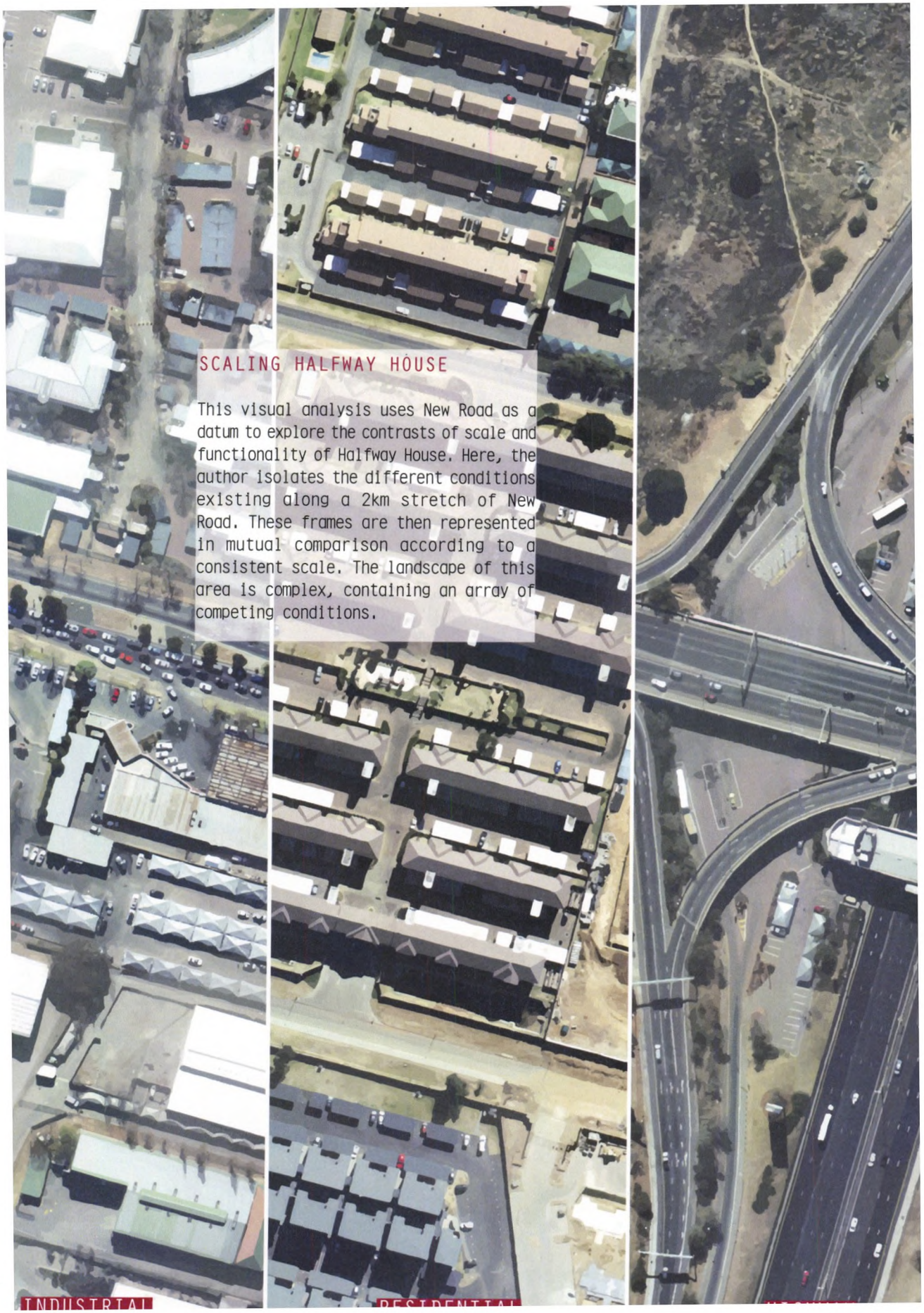
NEW ROAD

THE SOLE EAST-WEST CONNECTOR

The Ben Schoeman Highway provided a direct north-south link between Johannesburg and Pretoria. Halfway House has developed along this arterial, with the highway bisecting the built form.

New Road provides the sole east-west connector in this north-south orientated Halfway House, which is bound between the Allandale Road and Olifantsfontein Road interchanges. As a result, this arterial provides a critical accessible link. However, its popularity means that New Road's traffic rate ranks amongst the slowest in Gauteng.

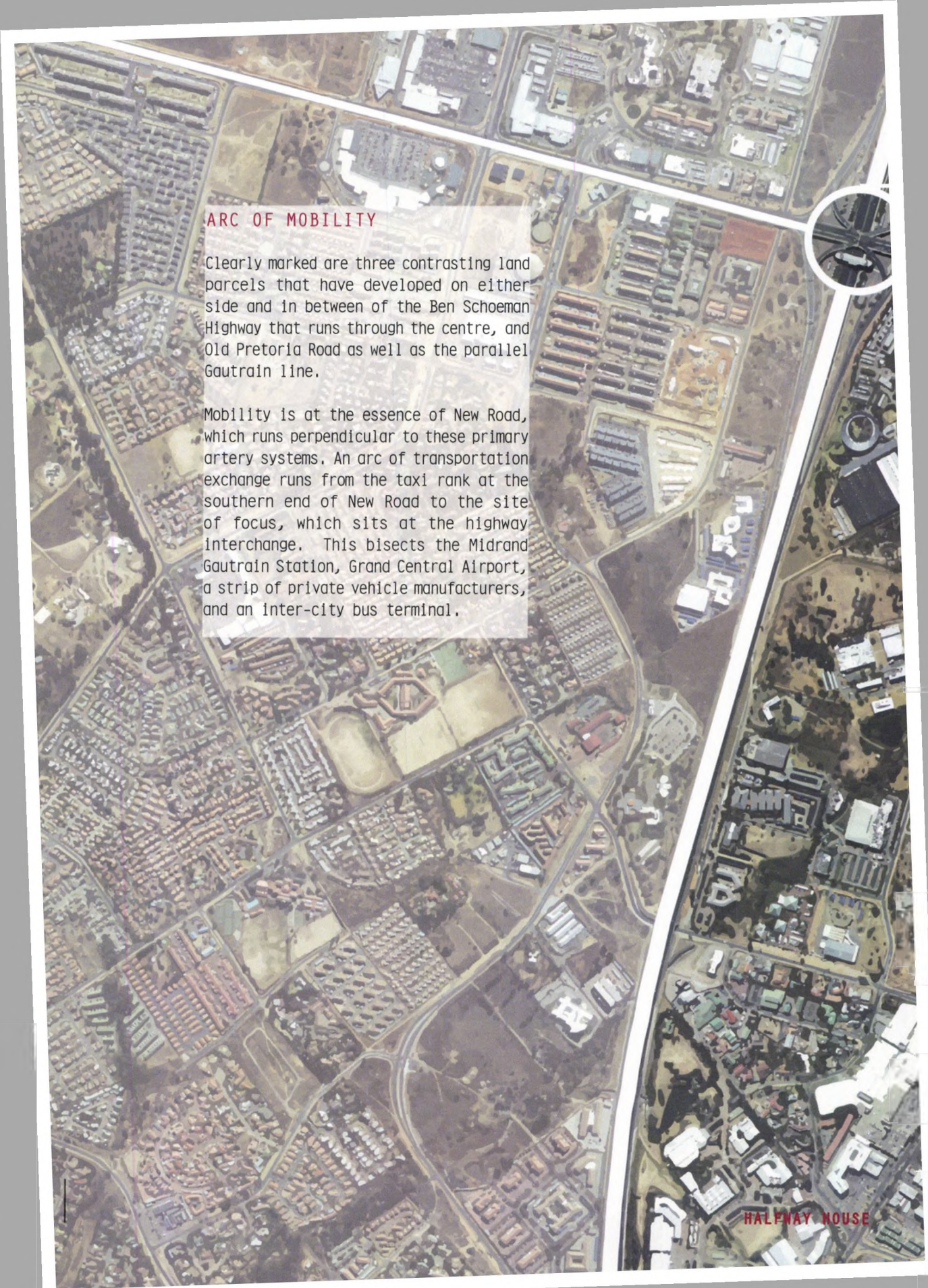

Horizontal Link
New Road provides the critical east-west connector in a north-south



SCALING HALFWAY HOUSE

This visual analysis uses New Road as a datum to explore the contrasts of scale and functionality of Halfway House. Here, the author isolates the different conditions existing along a 2km stretch of New Road. These frames are then represented in mutual comparison according to a consistent scale. The landscape of this area is complex, containing an array of competing conditions.


SUBURBAN



ARC OF MOBILITY

Clearly marked are three contrasting land parcels that have developed on either side and in between of the Ben Schoeman Highway that runs through the centre, and Old Pretoria Road as well as the parallel Gautrain line.

Mobility is at the essence of New Road, which runs perpendicular to these primary artery systems. An arc of transportation exchange runs from the taxi rank at the southern end of New Road to the site of focus, which sits at the highway interchange. This bisects the Midrand Gautrain Station, Grand Central Airport, a strip of private vehicle manufacturers, and an inter-city bus terminal.

An Axis for Mobili

New Road pro the datum fr which an arr isolated tra infrastructu connect

FIG. 2E.09


NISSAN

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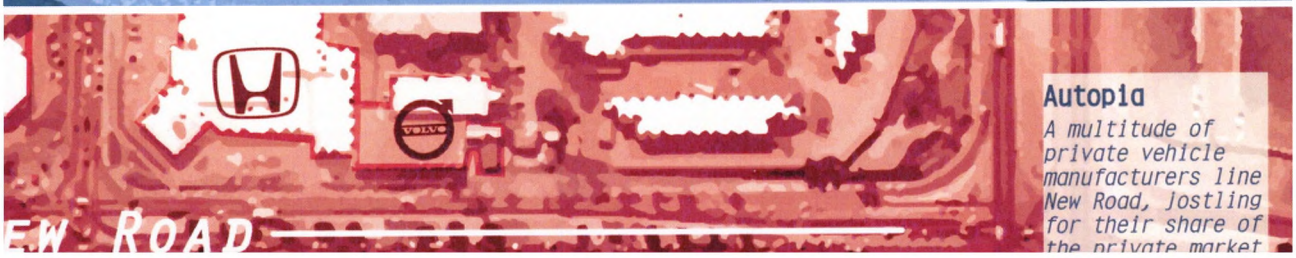
Democratizing Mobility

Superimposing two contrasting socioeconomic transit systems along New Road's arc of mobility

FIG. 2E.010



Autopia

A multitude of private vehicle manufacturers line New Road, jostling for their share of the private market

INTERCHANGE

A SPACE OF INTERSECTION & INTERFACE

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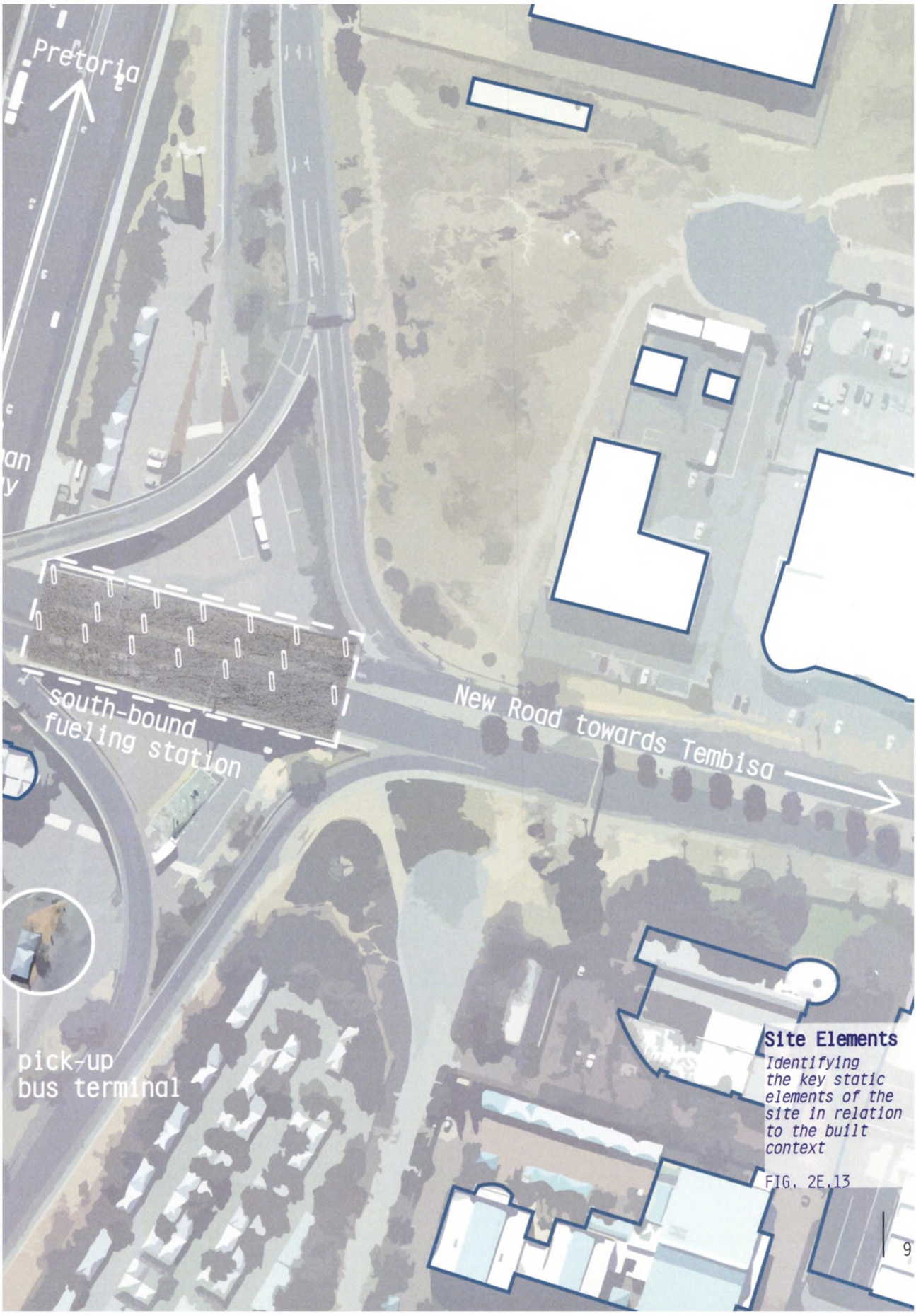
The Overhead & the In-between

Perspective of the site from the south-east embankment

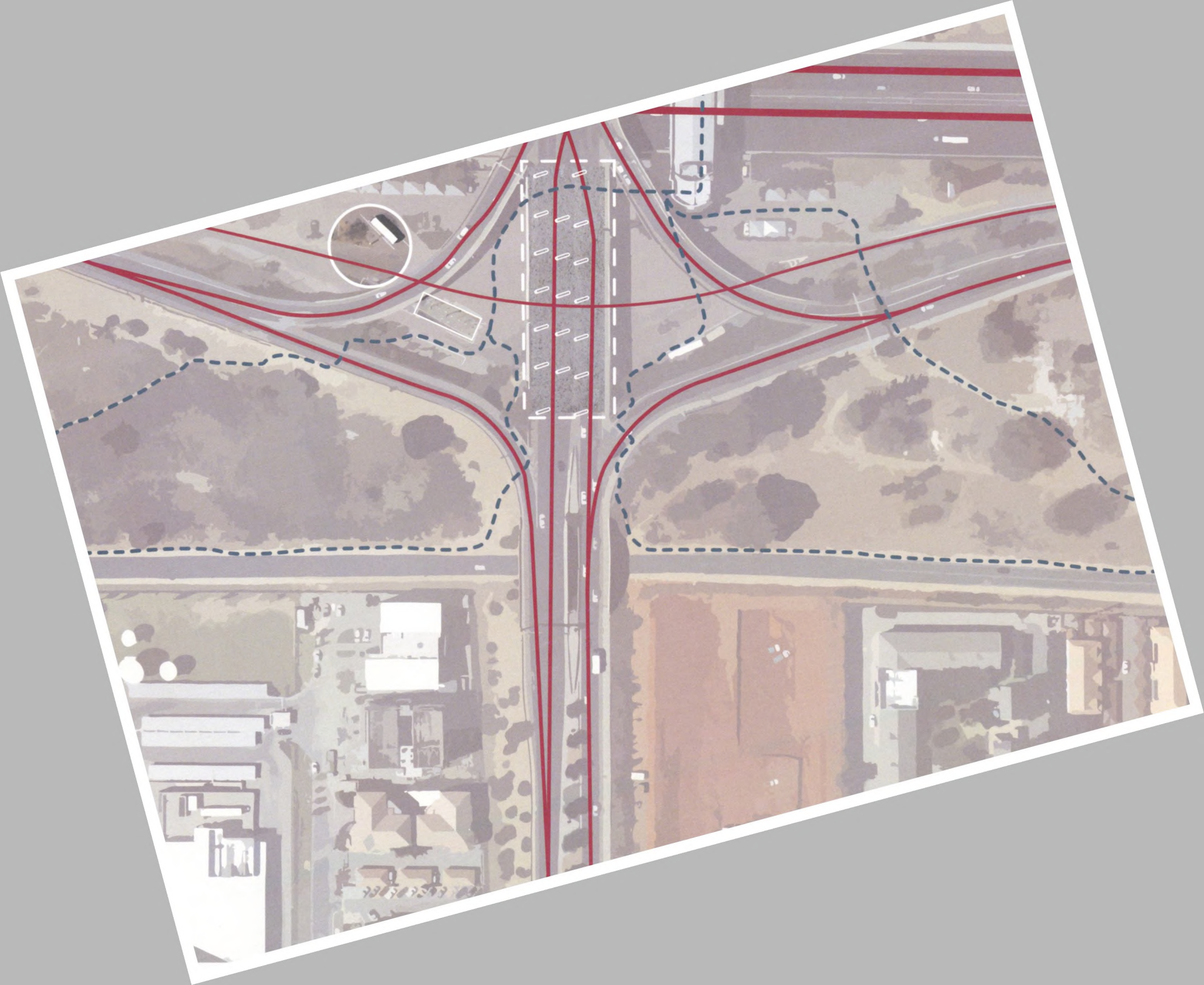

north-bound
fueling station
New Road towards Kyaiami
Johannes



Site Elements

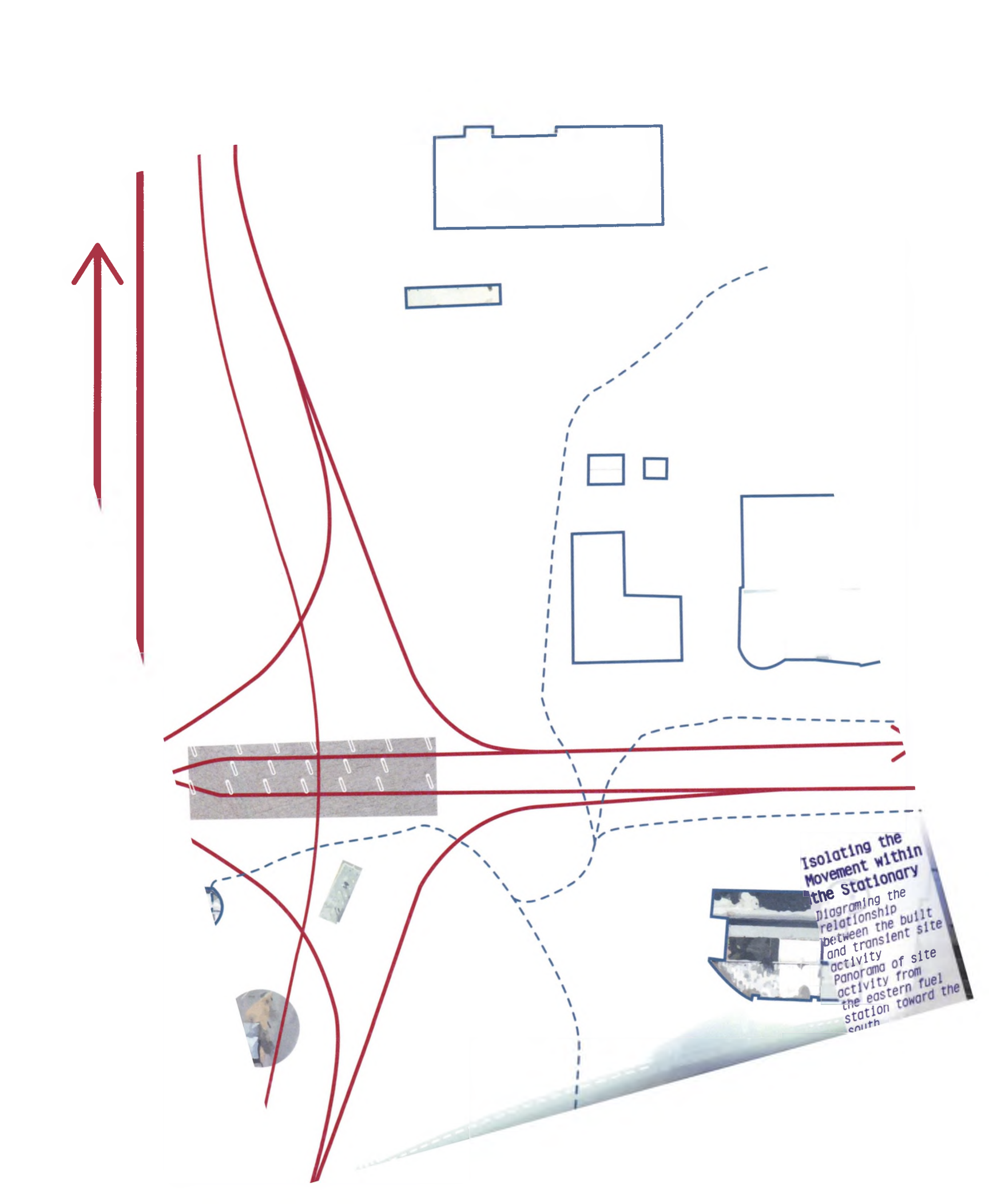
Identifying the key static elements of the site in relation to the built context

FIG. 2E.13

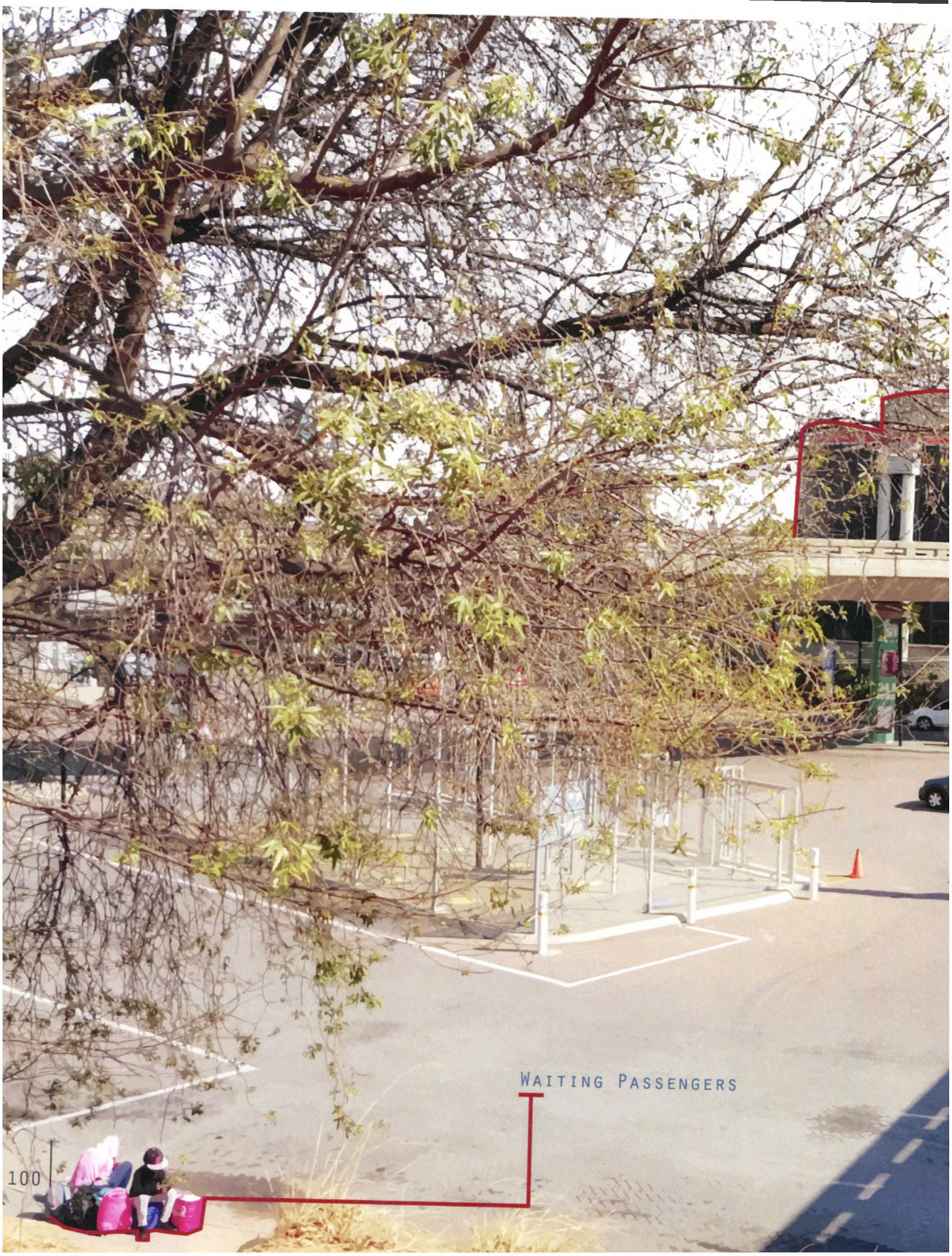



Tracing Pathways
Analyzing the primary vehicula and pedestrian routes that transverse the interchange
FIG. 2E.14

86


Isolating the Movement within the Stationary
Diagraming the relationship between the built and transient site activity
Panorama of site activity from the eastern fuel station toward the south

SITE CONDITIONS

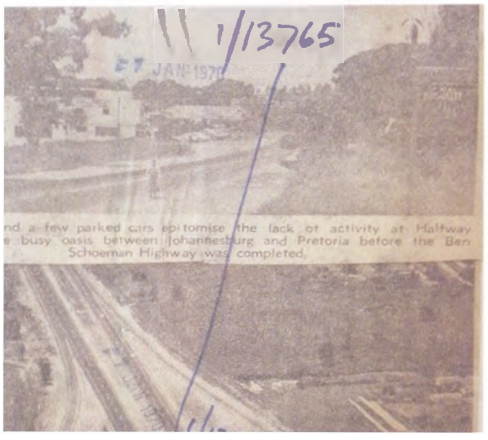


Lost in Scale

Aerial of the New Road interchange (above)

South-east quadrant of the site from the existing informal pedestrian path (below)

FIG. 2E.16
FIG. 2E.17



PART F

CONTEXTUAL ANALYSES

HISTORICAL LANDSCAPE

FROM PLACE OF PAUSE TO A SPACE OF RAPID DEVELOPMENT

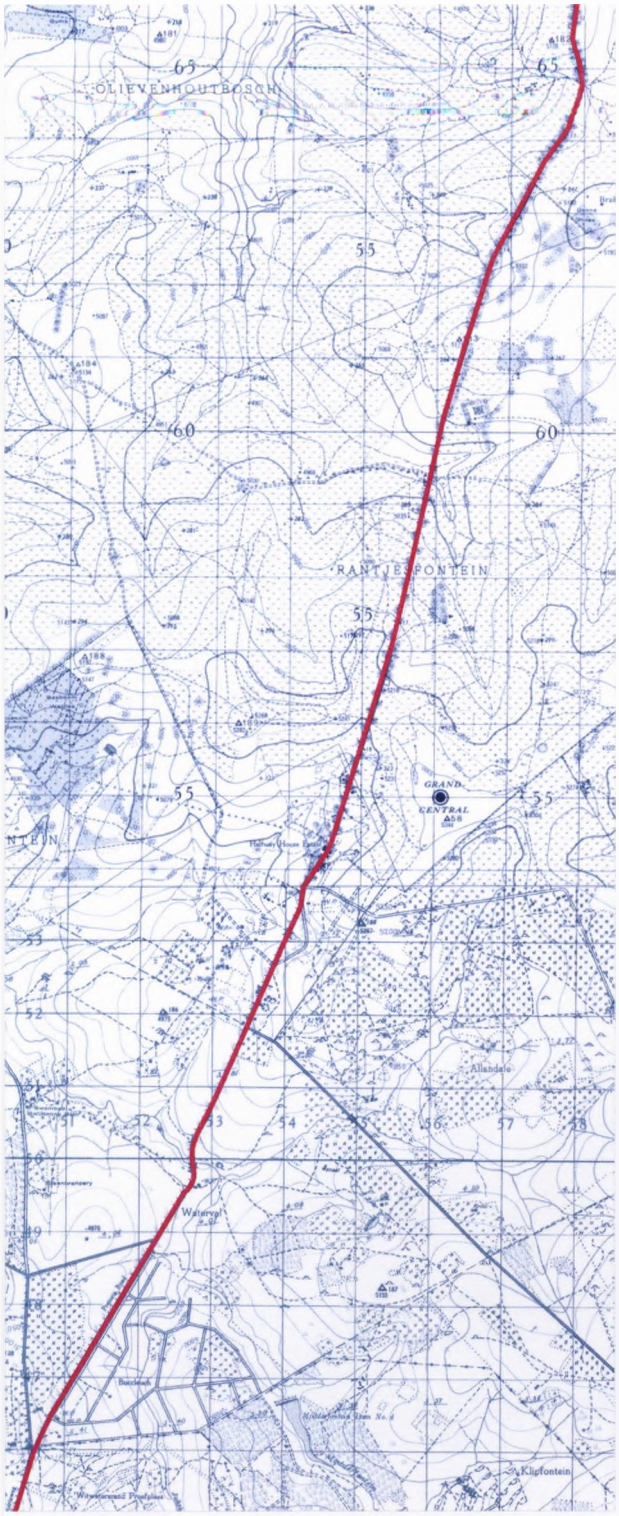
Historically, the area has always shared a symbiotic relationship with roadway systems. Halfway House was aptly named as it served a point of rest for commuters in the pre-motorised era. Halfway House initially developed off of the sole arterial between the mining town of Johannesburg and the administrative centre of Pretoria 50km away. This road would become known as the R101, changing names from Old Johannesburg Road, to Old Pretoria Main Road, to Louis Botha Avenue along its length. The road also predates the city of Johannesburg and its current urban context. Sections of the road formed part of the original dirt track leading to the ZAR capital, Pretoria. The road also predates its urban context and was therefore influenced primarily by the natural environment; by the Witwatersrand ridges and the boundaries of existing farms and geographical features(Hart 2004, p.54). This arterial was also of strategic importance to the security of both cities. During the Anglo Boer South African War it was protected by the ZAR Government troops and the British Army (Shorten 1970, p.95). In 1968, the Ben Schoeman Highway was opened. Running parallel to Old Pretoria Main Road, it formed a new high-speed arterial. It was seen as the a major enabler of the country's economy, and today it marks the busiest stretch of road in South Africa. This innovation transformed Halfway House from place of pause to a space of rapid development. Promptly, industry developed between these primary arteries as the area became desirable for its highway proximity. In 1981, this growing urban context was established as a separate municipality and named Midrand, with the original epicentre remaining as Halfway House. At the beginning of the 21st century, it was incorporated into the City of Johannesburg (Hart 2004, p.107).

HALFWAY HOUSE

Metamorphosis

Revealing contemporary development through superimposing two national geo-spatial maps seventy-five years apart (1939-2014)

FIG. 2F.02



1940

Pretoria's primary link to the mines is formalised from a dirt road as Johannesburg begins a process of rapid urbanisation. Halfway House simply serves as a point of rest for inter-city commuters.

1960

The Ben Schoeman Highway is constructed parallel to the existing roadway in an effort to increase ease of access to Johannesburg, now South Africa's most populous city. Halfway House remains undeveloped.

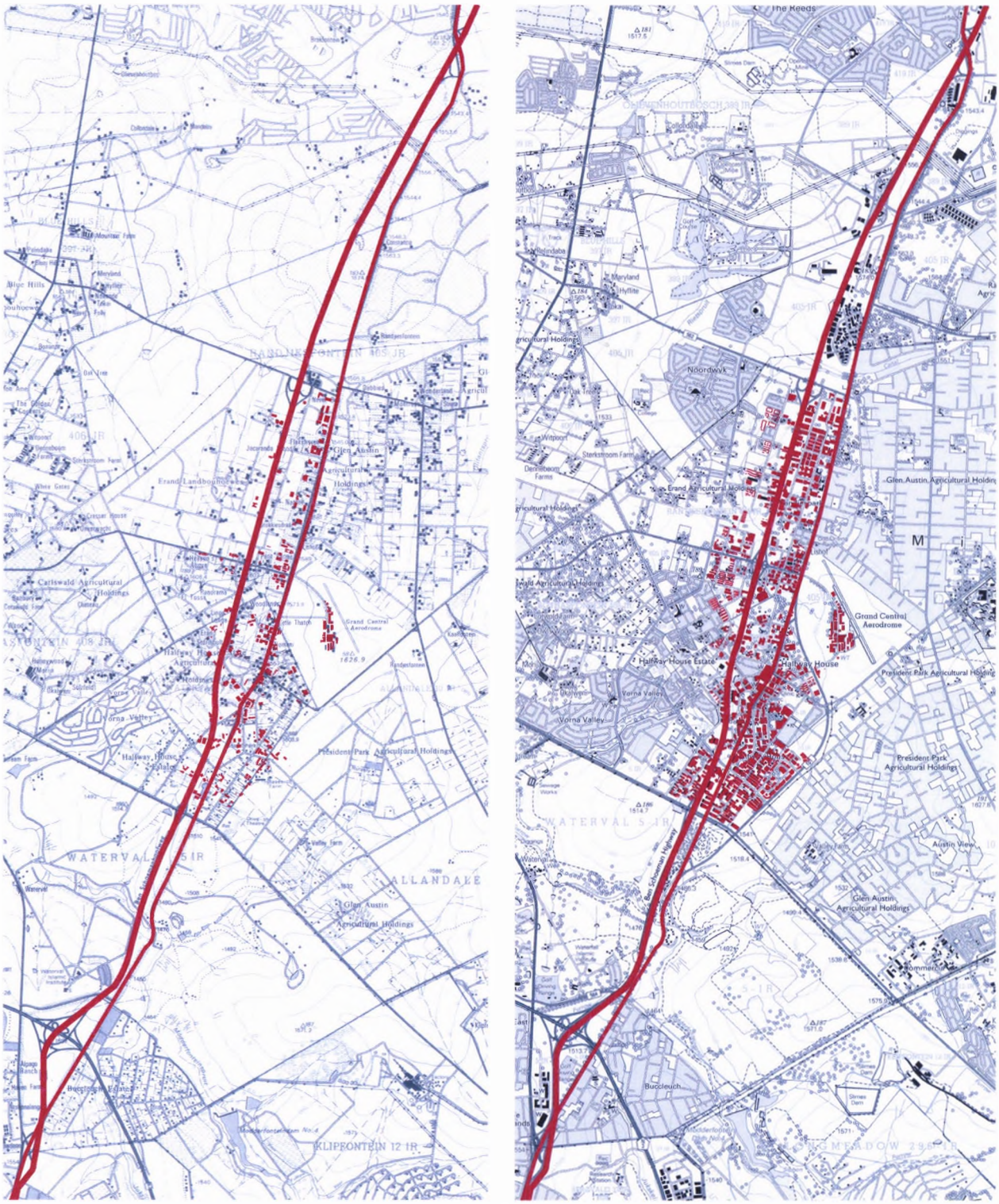


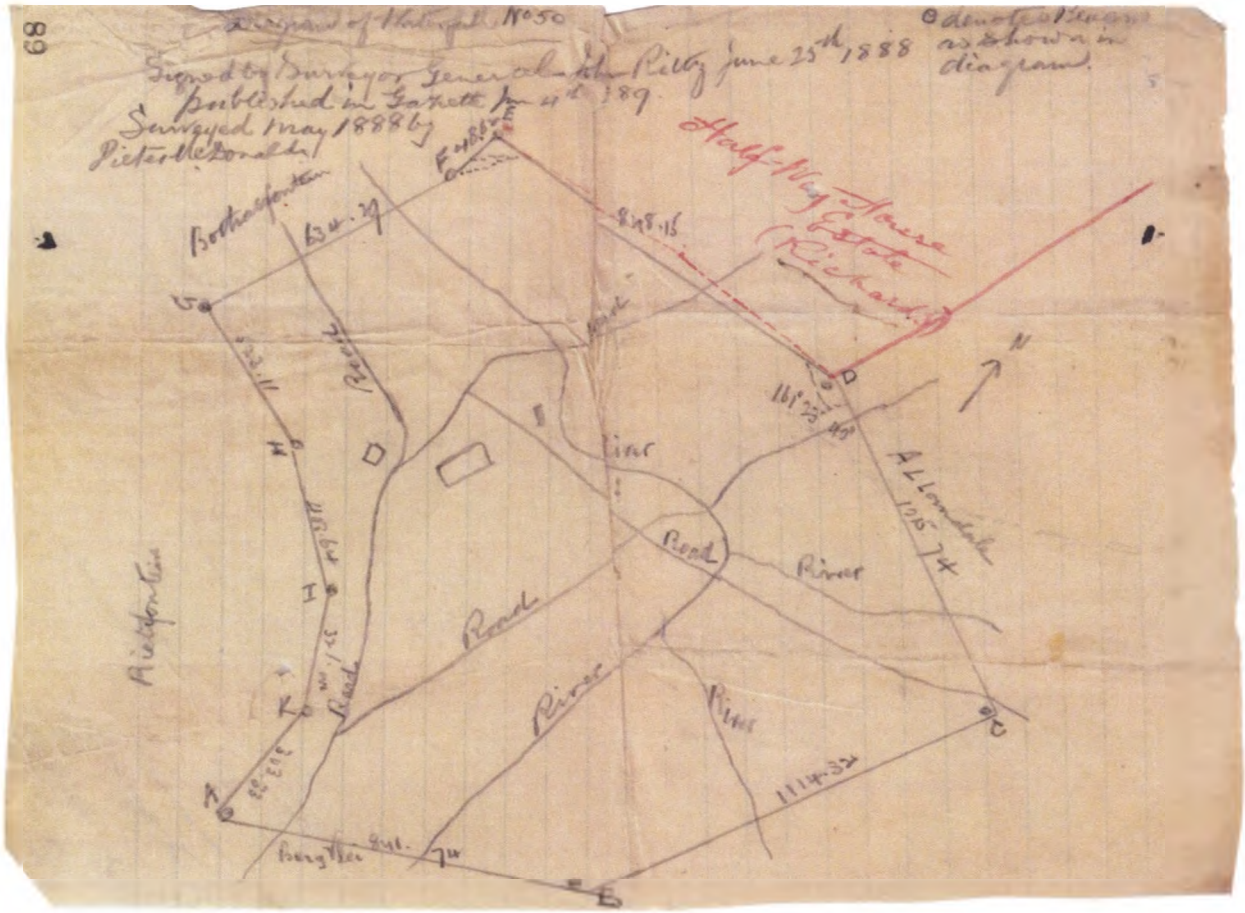
FIG. 2F.03

1975

Highway proximity in an ever automobile dependant era leads to the rapid development of Halfway House. Soon this in-between landscape is to be established as its own municipality, Midrand.

2015

With Midrand now formally part of the City of Johannesburg, Halfway House continues to develop as a major business district with the city constantly investing in its economic & infrustructural growth.



Responsive Arteries

Original Old Pretoria Road layout in relation to rivers and significant site markers, signed by Survey General, John Riltz 1888

FIG. 2F.04

Original Landscape

Drawing by Fred Bauer of the unspoilt scenery, entitled: "Half Way House Boulders" 1889

FIG. 2F.05

Rest Stop
A roadside place of pause for Pretoria's horse-drawn carriages, both leaving and returning
1882

FIG. 2F.06

Roadside-Inn
The first place of short term accommodation designed for motorized transportation
1902

FIG. 2F.07

Waterfall Park
Family portrait on the grounds of what today is Africa's largest urban development, Waterfall Estate
1906

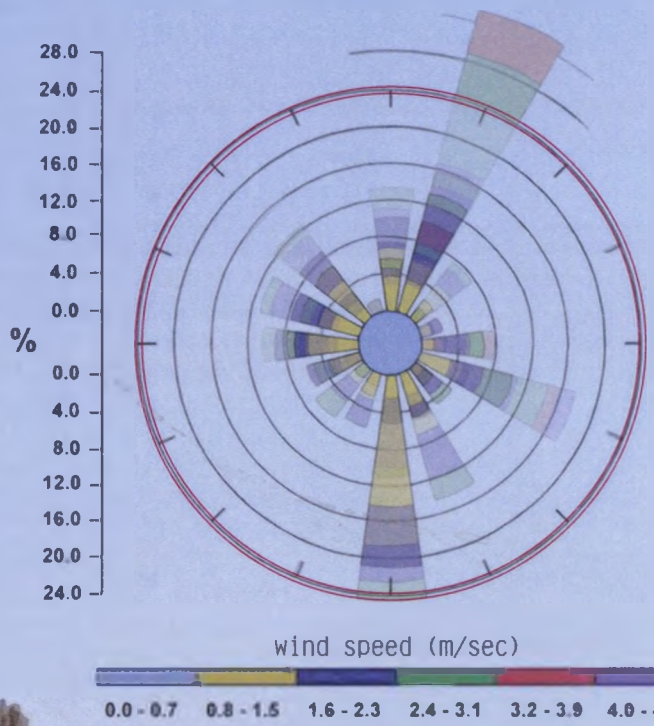
FIG. 2F.08

NATURAL LANDSCAPE

THE DISAPPEARING HIGHVELD

The geographical context of Halfway House categorises the local climate as subtropical highland. This system is characteristic of the greater Highveld environment in which Gauteng subsides. This natural region is iconic for its temperate grasslands, heavy winter rainfall, and unique wildlife. However, the urban dominance over this region has led to the deterioration of the Highveld's flora and fauna. Characteristic of this is the plight of the straw-coloured fruit bat, a species indigenous to this region. Urban development has disrupted their natural habitat, forcing these nocturnal mammals to take up refuge in artificial habitats such as at the New Road highway bridge. However the resulting noise, light, and sound pollution has led to this site-specific species to be listed as critical.

Halfway House is under threat by uncontrolled climate change due to its development on wetlands. Rapid development along route of transit rather than ecologically driven planning has led to a large proportion of Midrand being built on natural wetlands. This indigenous ecosystem acts as a sponge in the event of an extended period of wet weather, common to the Highveld climate. In addition to construction on the wetland, developers have not taken the historic flood line into consideration. This has adversely affected the vegetation and wildlife of Halfway House, leaving the area susceptible to the forces of nature.



Macro & Micro Site Elements

An endangered straw-coloured fruit bat takes refuge in the infrastructure of Halfway House (left)

Wind rose displaying the annual speed and direction of the vernacular wind (right)

FIG. 2F.09
FIG. 2F.10

Endemic Grasslands

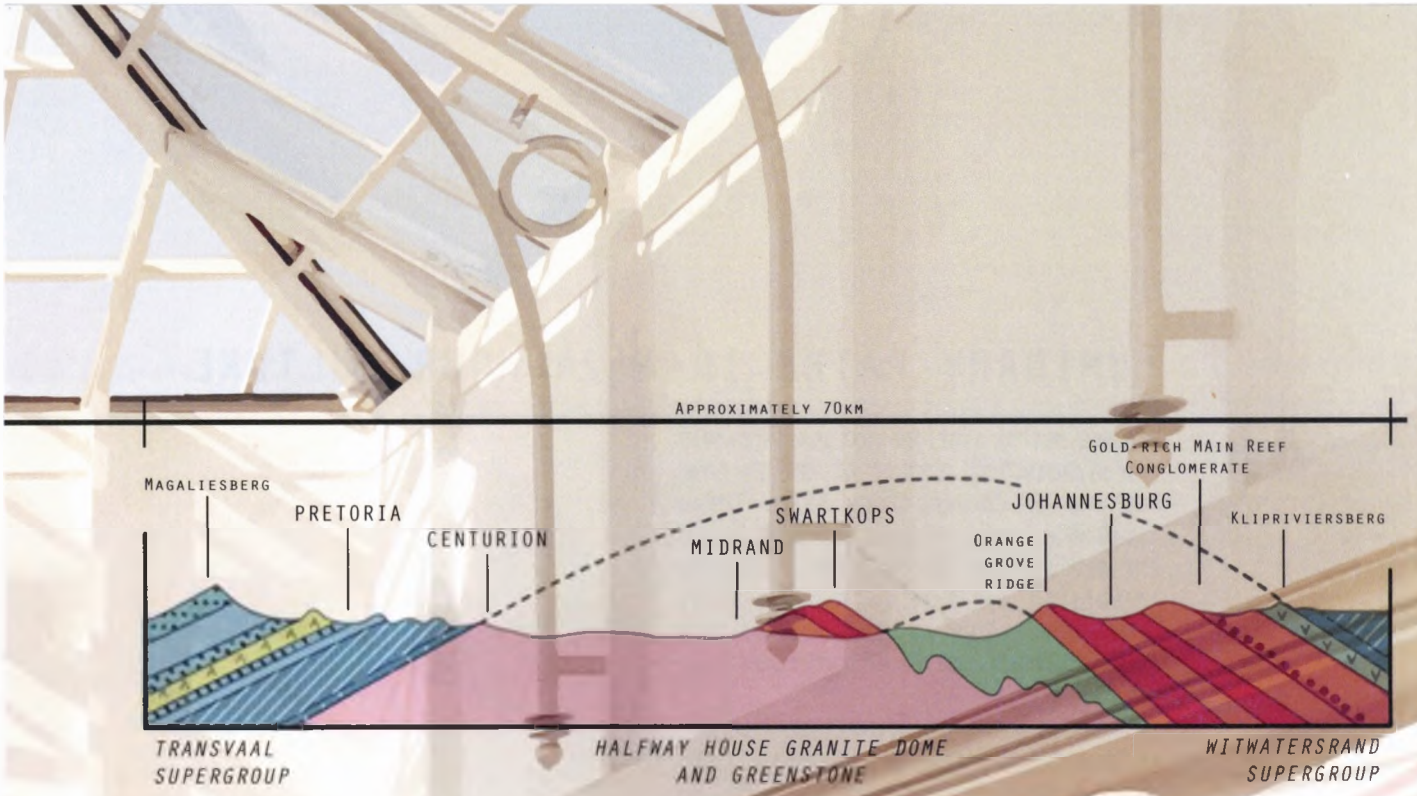
A remaining sample of the Highveld's common thatching grass is found behind the Midrand Gautrain Station

FIG. 2F.11

NATURAL VS. BUILT LANDSCAPE

The Johannesburg Dome, between Johannesburg and Tshwane, covers seventy kilometres and is centred on Halfway House Granite Dome. This geological occurrence becomes the pivotal point for both the Traansvaal and Witwatersrand supergroups. Hence, Halfway House is both a point of contextual and natural connection between Gauteng's two major cities.

However, traces of this geographical phenomenon have all but disappeared from the landscape. Rapid development has seen Halfway House's iconic boulders demolished and removed from the land to make way for unresponsive architecture. However, The Boulders Mall pays tribute to the geological significant of the landscape within its primary atrium. This retail development, which forms the anchor for the local taxi rank, has adopted its name from this natural phenomenon. During construction, original boulders were recovered from the site and placed within the mall's primary atrium and along the island of the road that feeds into the complex.



Geological Keystone

Cross-section through the Johannesburg Dome (top)

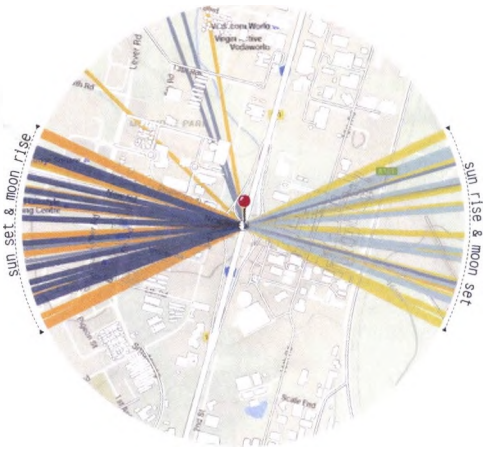
A tribute to the geographical significance of the landscape in an atrium of Boulders Mall in Halfway House (spread)

FIG. 2F.12
FIG. 2F.13

LUMINARY PATHS IN A 24 HOUR CULTURE

Highway petrol stations and bus terminals are prototypical spaces of the 24 hour routine of contemporary life. These typologies are forever available to the public, facilitating early morning refuelling and midnight bus arrivals. This condition is typical of the anthropological notion of supermodernity.

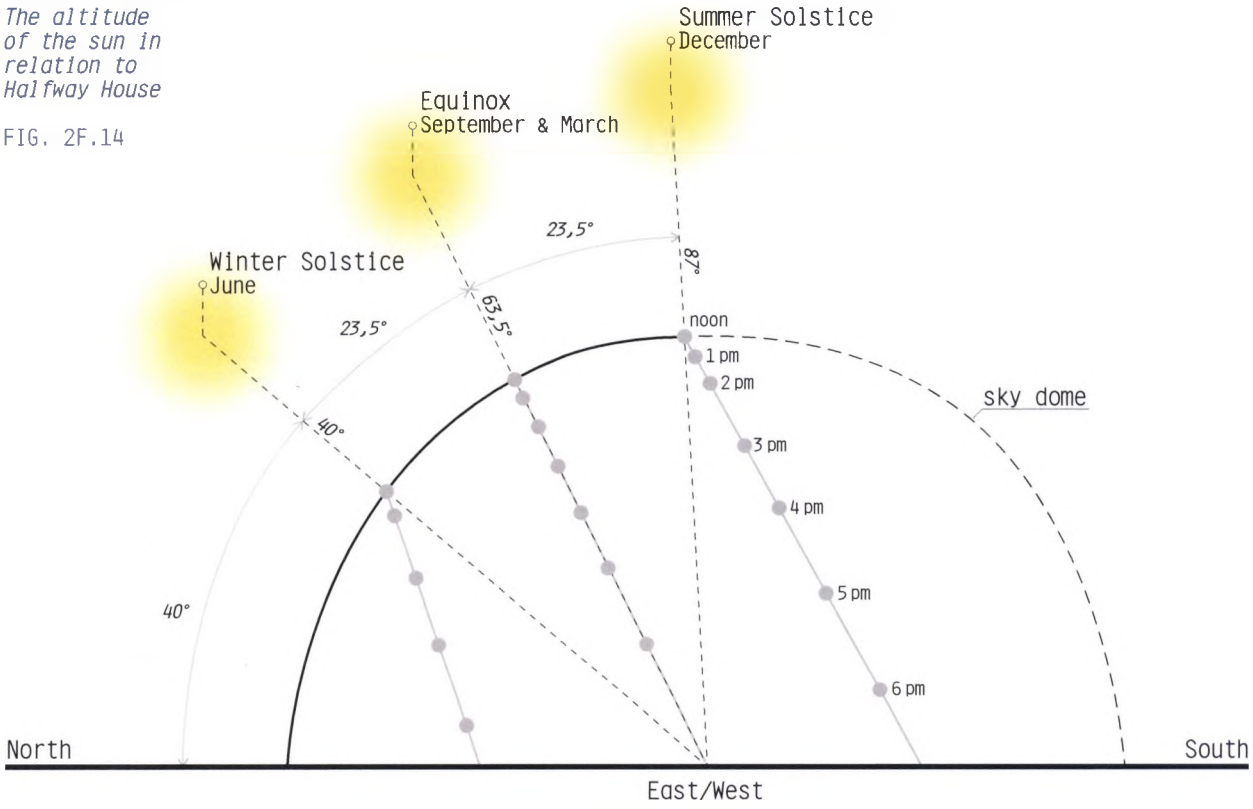
In a world where the transition from day to night is blurred, the movement of the sun and moon are seemly irrelevant. In an attempt to re-engage with the natural phenomena of the site, the author has mapped the positions of the sun and moon in relation to the interchange. This study took place over an annual cycle, marking significant luminary dates.



Solar Sequence

The altitude of the sun in relation to Halfway House

FIG. 2F.14



"When you look at the night sky, you realize how small we are within the cosmos. It's kind of a resetting of your ego. to deny yourself of that state of mind, either willingly or , is to not live to the full extent of what it is to be human."
(Tyson, 2006)

24 November 2014
00:44

164.4° -41.7°
343.9° +45.6°

24 December 2014
13:27

276.7° +75.2°
113.5° -73.6°

05 January 2015
06:53

106.8° +18.4°
281.8° -17.9°

04 February 2015
01:09

163.4° -46.1°
339.8° +49.0°

05 March 2015
20:05

252.0° -20.8°
073.4° +21.8°

04 April 2015
14:05

314.5° +47.8°
134.3° -48.8°

04 May 2015
05:42

077.9° -11.7°
260.8° +10.5

02 June 2015
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288.9° -12.4°
104.9° +09.2

02 July 2015
04:19

078.6° -34.0°
264.1° +31.3

31 July 2015
12:42

350.2° +45.2°
167.6° -49.6

29 August 2015
20:35

261.8° -36.9°
079.1° +35.9°

28 September 2015
04:50

099.3° -14.4°
279.1° +13.7

27 October 2015
14:05

286.4° +56.0°
111.4° -56.0°

26 November 2015
00:44

164.4° -41.7°
343.9° +45.6°

25 December 2015
13:11

276.7° +75.2°
113.5° -73.6°

Tracing Trajectories
sunrise (yellow)
sunset (orange)
moonrise (blue)
moonset (navy)

FIG. 2F.15

TRANSIT LANDSCAPE

ASSESSING VIABILITY

This chapter follows extensive research conducted through *Simulated Office Practice*, a supplementary masters course. Here, the author will integrate the data collected in order to speculate a viable scenario for the implementation of the design proposal.

There are two principle sections that the author has chosen to focus on in order to determine viability. Firstly, a stakeholder analysis is conducted where I where the author investigates the possibility a business collaboration. This is used to test the funding mechanisms through a variety of entities. Secondly, in order to fully understand the client base and user demographics a comprehensive site survey is conducted.

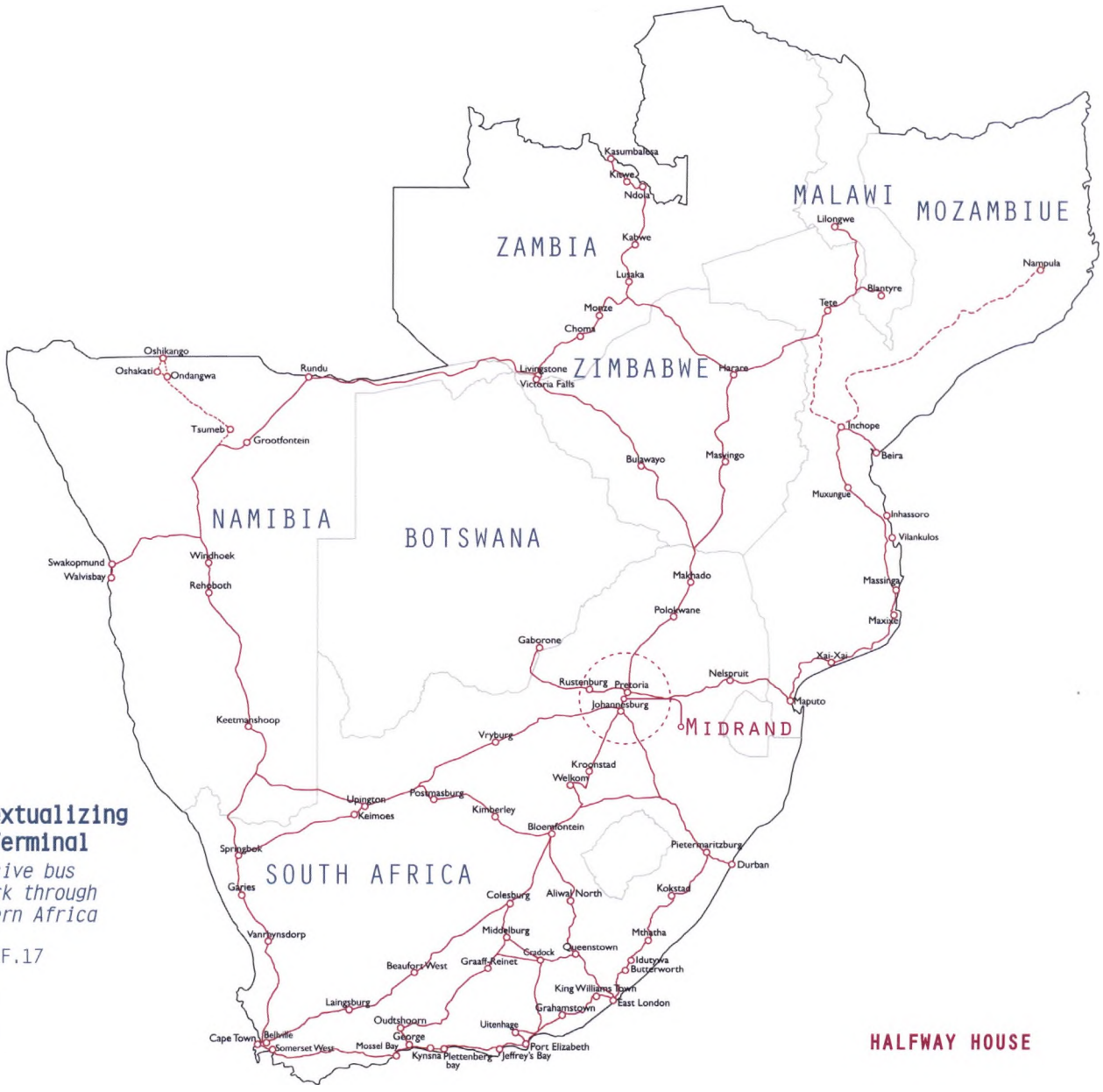
Through these two parallel exercises the proposal will be tested and adjusted in terms of capability and capacity.

FIG. 2F.16

CONTEXTUAL SIGNIFICANCE

In 1968 the Ben Schoeman Highway was opened. Running parallel to Louis Botha Avenue, it formed a new high-speed arterial between Johannesburg and Pretoria. Today, it forms part of the N1 Highway and marks the busiest stretch of road in Southern Africa. This 60 kilometer stretch of road has become a key connective element for Southern Africa as well for our local interior regions.

Midrand is ideally situated at the epicenter of this transit route and is fast developing into a metropolis. The project site incorporates a major bus terminal which acts as South Africa's urban gateway. This serves an array of state-owned and private coach liners as well as formal and informal taxi services.



Contextualizing the Terminal

Extensive bus network through Southern Africa

FIG. 2F.17

Port of Entry

The current bus stop shelter illustrating the key point of access at which the site sits

FIG. 2F.18

Departure

Passenger pick-up point serves multiple forms of transportation

FIG. 2F.19

FOOTFALL ANALYSIS

The Ben Schoeman Highway carries an average of 300,000 vehicles across Gauteng daily. Midrand has long been an area of transience, passed through rather than a destination in itself. However, today Midrand thrives as a rapidly urbanizing suburban business district that houses a high concentration of South Africa's blue chip companies. This is primarily due to the visual exposure that comes with highway proximity.

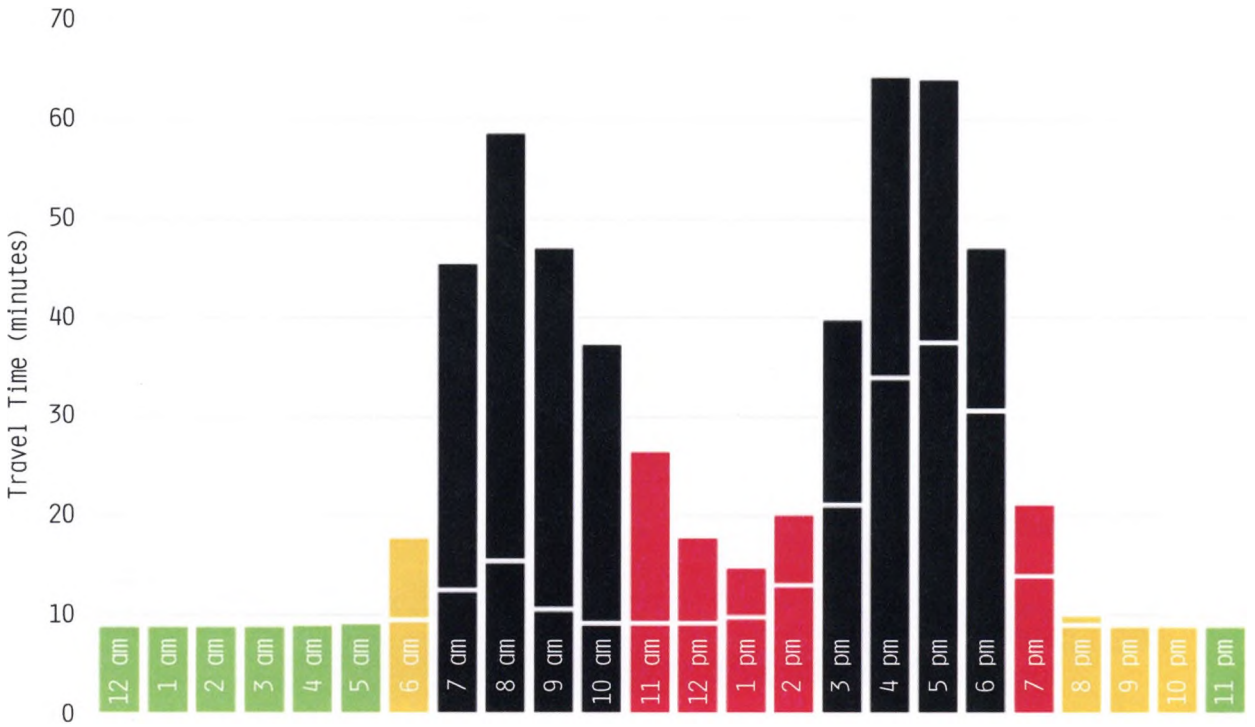
Rapid development along the Ben Schoeman inter-city arterial has resulted in major congestion issues. Midrand has been the worst affected, with daily traffic standstills during peak travel hours. This latent potential energy needs to be better managed by the design scheme.

Essential to the viability of the fuel station and bus terminal performance is its efficiency. Due to the nature of the site, the design must be adaptable in order to process an irregular traffic flow. In doing so, the service delivery and user capacity must respond directly to a carefully conducted footfall analysis of the site. It is for this reason that a survey is conducted in order to ensure viability.

Research shows that a larger percentage of commuters live in Pretoria and travel to work in Johannesburg than the converse. This has resulted in a heavy southern traffic flow building up through the morning hours and stagnating northerly with afternoon movement.

Peak Traffic
Diagramming journey duration through the duration of a day

FIG. 2F.20



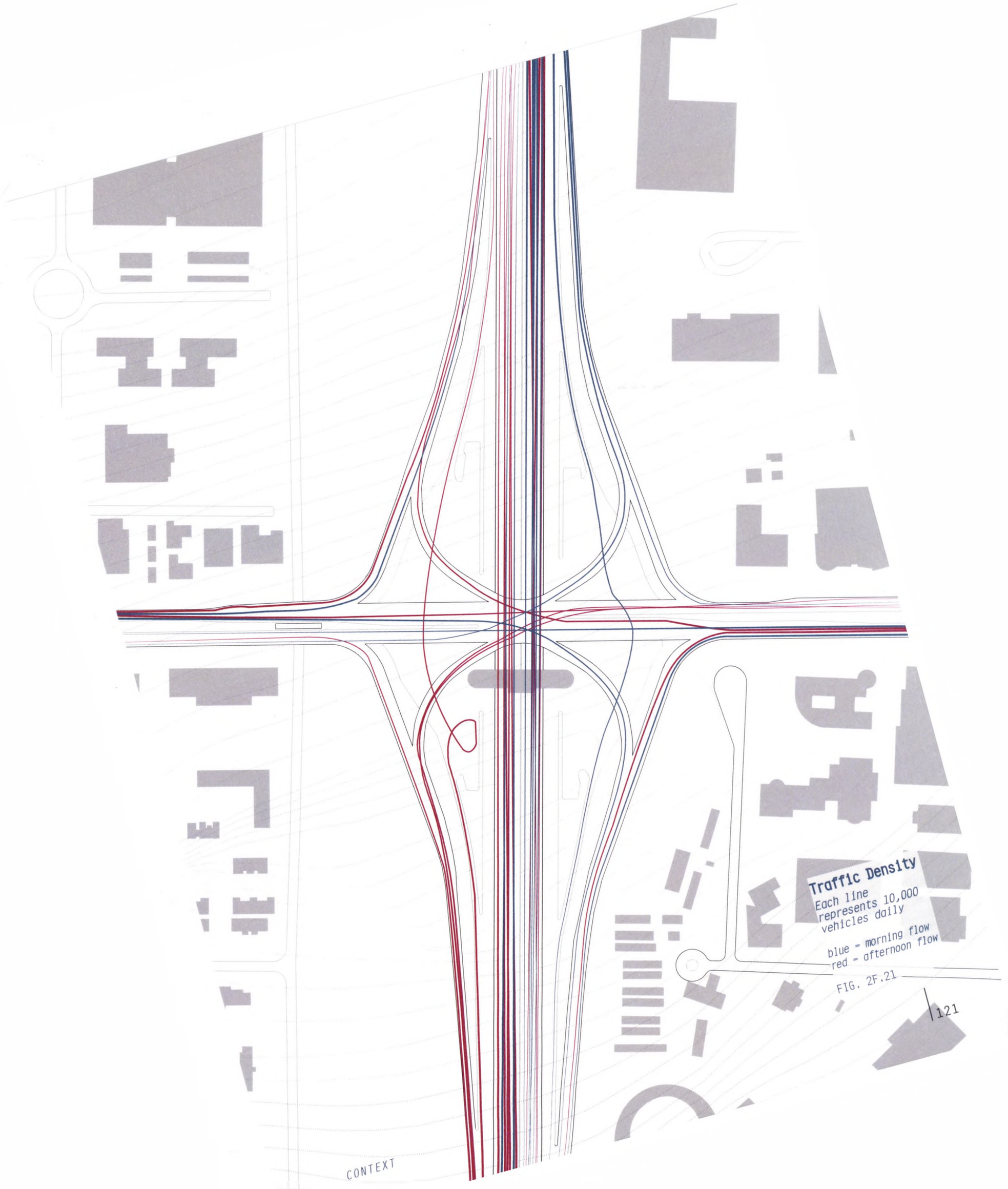


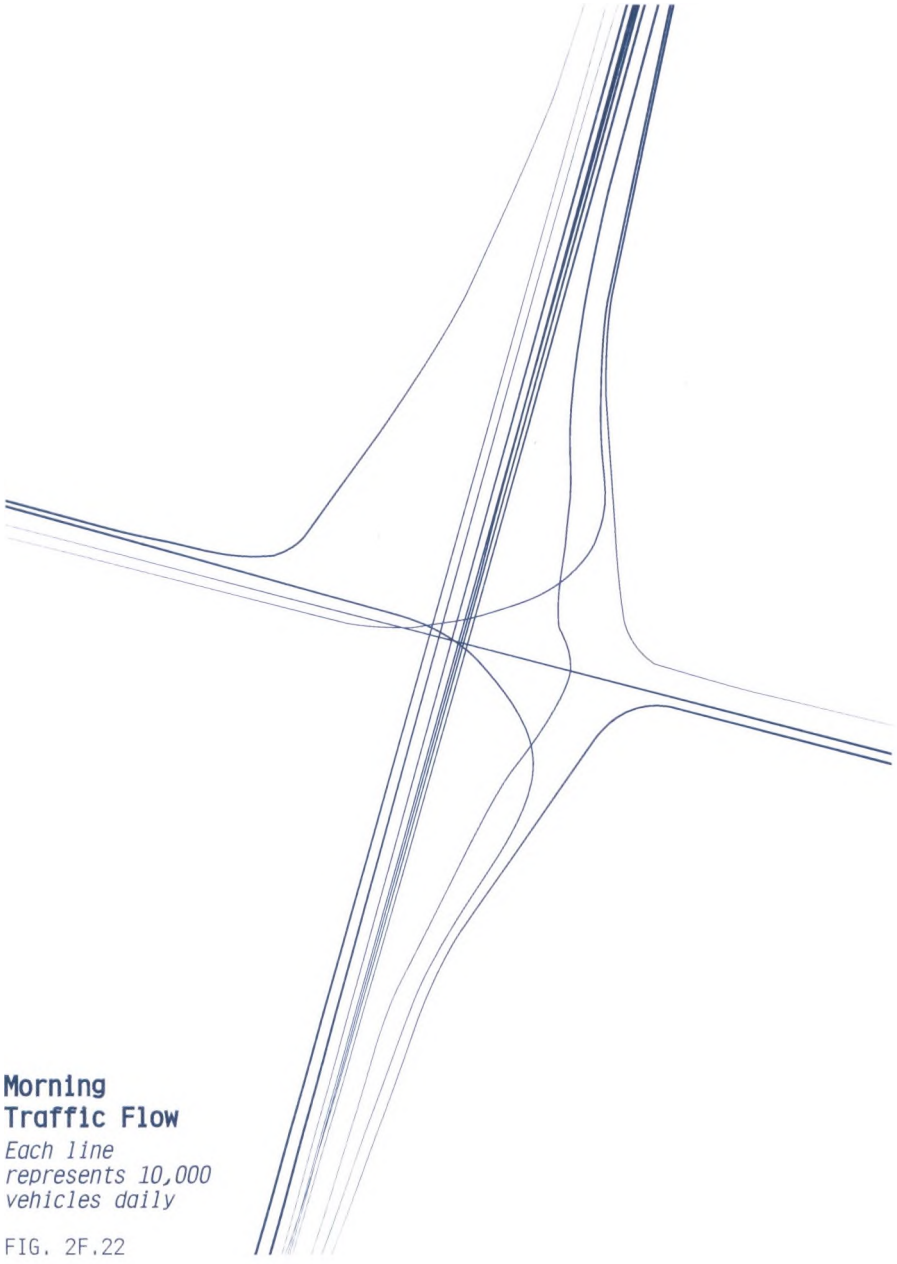
FIG. 2F.21

CONTEXT

MORNING FOOTFALL

The site comes to life from 5am, with a number of Pretoria residents making the early journey into Johannesburg in order to miss the 7-10am peak traffic hours. At 8:30am the Ben Schoeman Highway reaches its peak capacity along the southerly direction, with an average of 15 vehicles pulling into the eastern half of the site every minute. Users see this time as the most appropriate to refuel while traffic is at a standstill.

The location of the site is critical within the national context: the eastern half of the site, which serves the southerly direction, primarily functions as transportation pick-up point over the morning hours. It is for this reason that the design proposal has located the 'pick-up' terminal on this side of the site. Furthermore, the higher frequency of morning passengers means a larger area capacity for the pick-up terminal.



Morning Traffic Flow

Each line represents 10,000 vehicles daily

FIG. 2F.22

CITILINER

Mon-Fri:	9:00/11:00
Sat:	9:00
Sun:	9:00/10:30

INTERCAPE
Safe • Dependable • Affordable

Mon-Fri:	8:00/12:00
Sat:	8:00
Sun:	10:00

TransLux

Mon-Fri:	9:00
Sat:	10:00
Sun:	9:00

City to City

Mon-Fri:	8:30/11:00
Sat:	10:00
Sun:	N/A

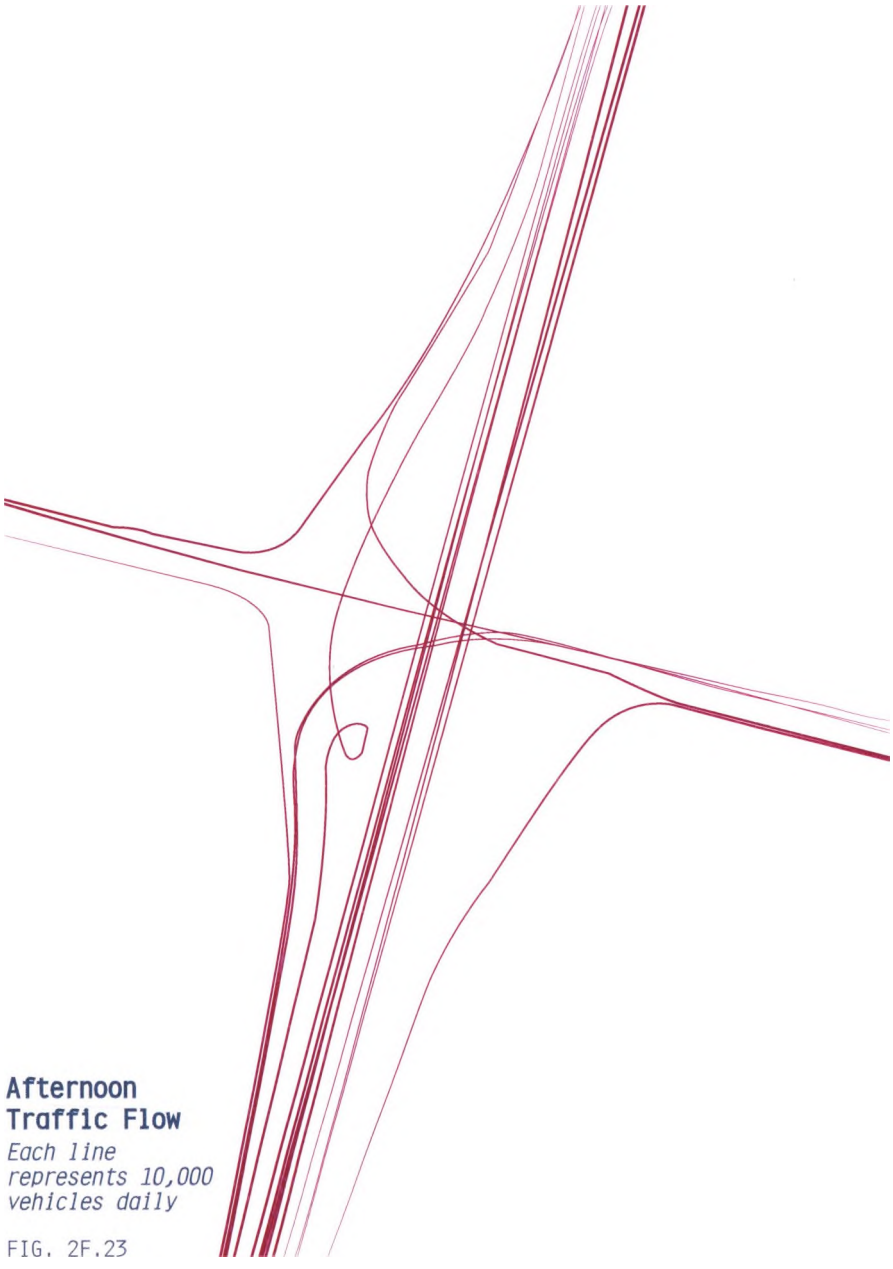
SA ROADLINK

Mon-Fri:	9:00
Sat:	N/A
Sun:	10:30

AFTERNOON FOOTFALL

The western half of the site which serves the northerly direction of the Ben Schoeman Highway, begins to reach peak capacity during the afternoon hours. From 3-6pm this direction reaches full capacity along with its corresponding petrol station. Fuel demands are higher as users are not pressured to get to work. The peak capacity hour tends to reduce from 6pm to 4pm as the week matures, with users returning home to Pretoria earlier.

It is only by the afternoon that the frequency of buses picks up along this direction, as passengers are dropped off. Most of these return trips begin along the country's coastal regions and terminate within South Africa's neighbouring countries. It is for this reason that afternoon and evening 'drop-offs' are often sporadic with varying commuter capacities. The Drop-off Terminal must be tailor-designed in this regard.



Afternoon Traffic Flow

Each line represents 10,000 vehicles daily

FIG. 2F.23

CITILINER

Mon-Fri:	13:00/20:20
Sat:	14:35/20:20
Sun:	13:00

INTERCAPE

Safe • Dependable • Affordable

Mon-Fri:	14:00/22:30
Sat:	14:00/18:30
Sun:	13:00/20:00

SPRINGBOK ATLAS

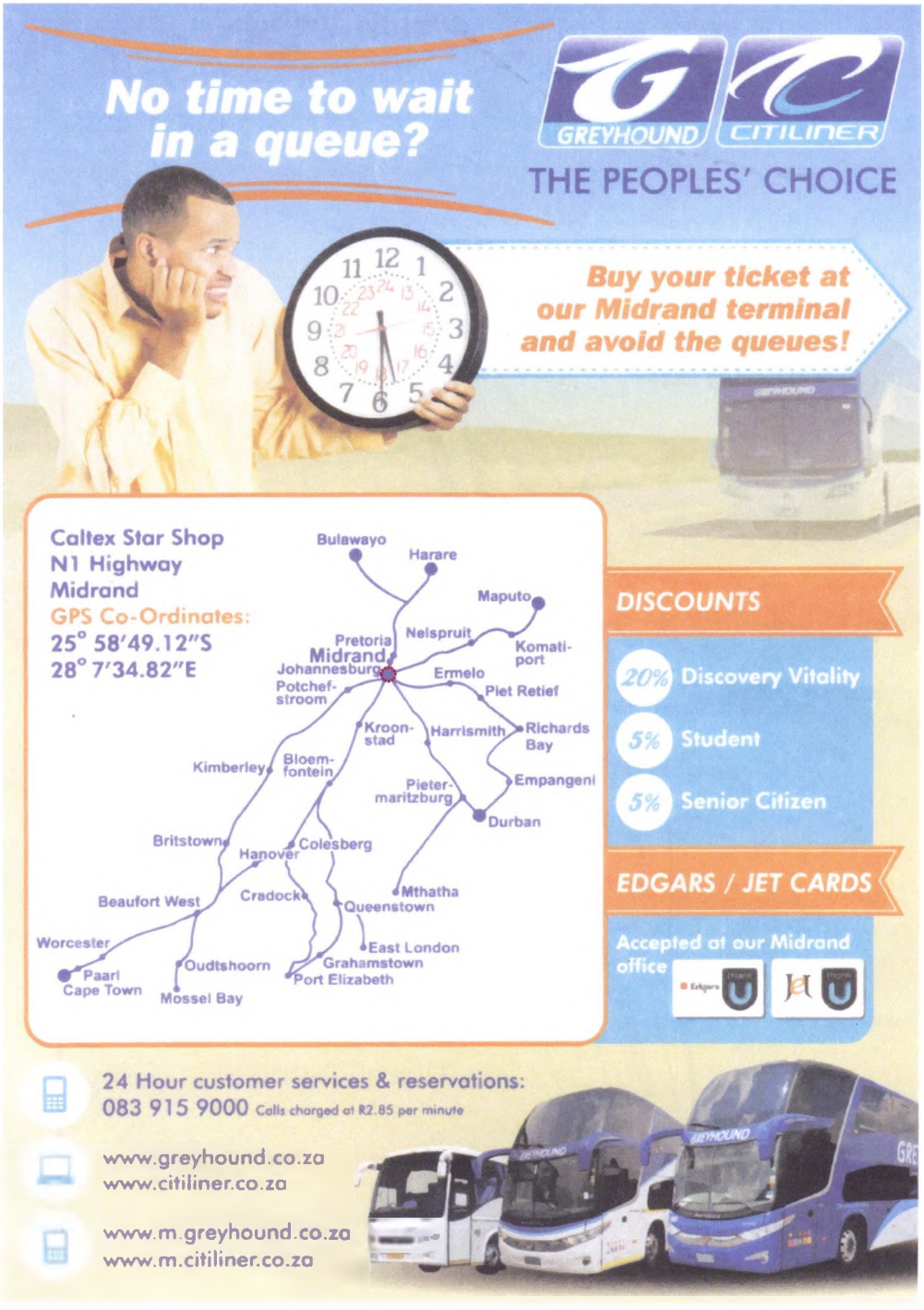
Mon-Fri:	15:00
Sat:	15:00/23:00
Sun:	15:00

Intercity Xpress

Mon-Fri:	13:00/17:00
Sat:	13:00
Sun:	N/A

BAZBUS

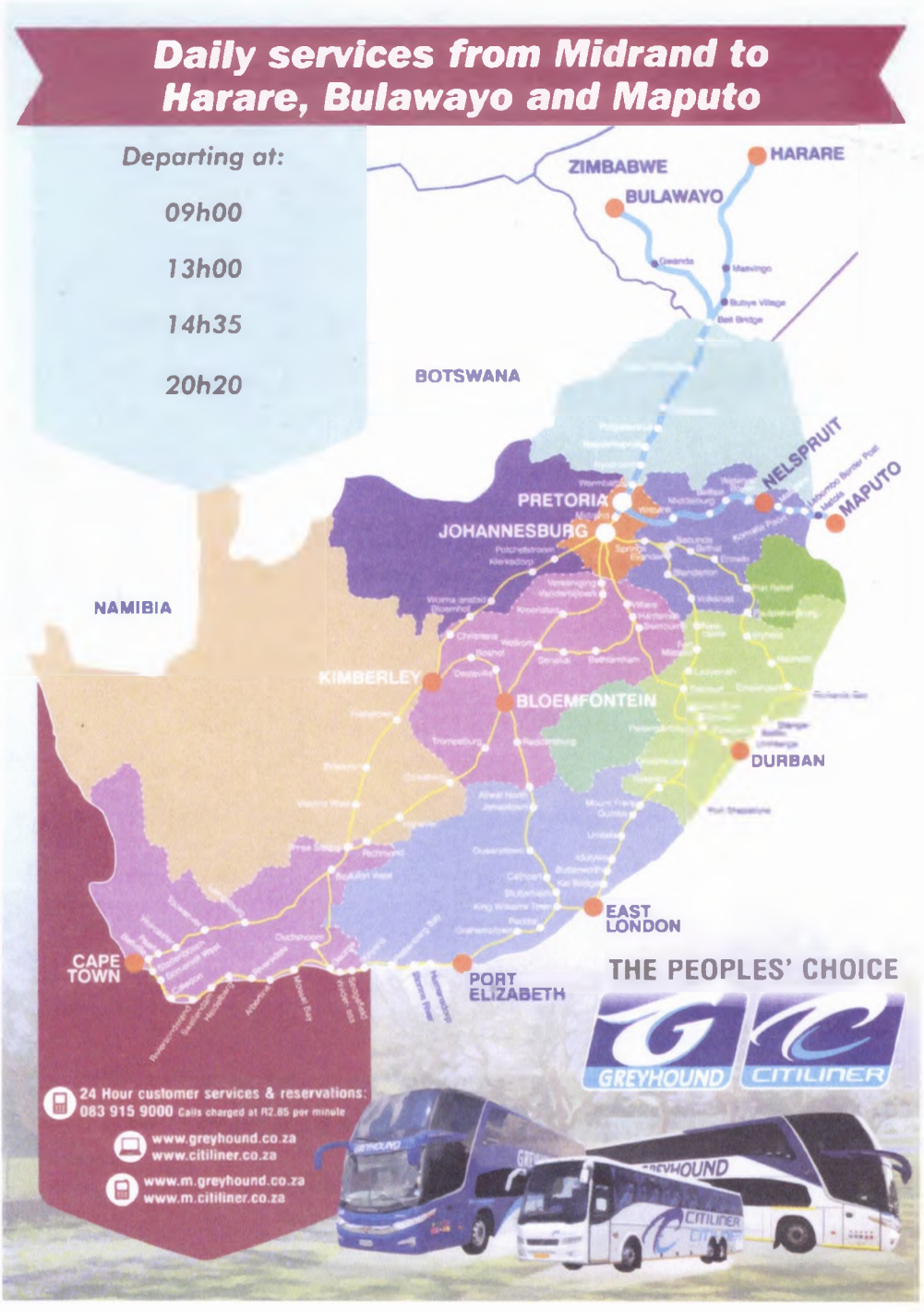
Mon-Fri:	N/A
Sat:	N/A
Sun:	14:00



Connective Gateway

Greyhound pamphlet indicating the key location of the Midrand bus terminal

FIG. 2F.24



Coupling Southern Africa

Greyhound pamphlet illustrating the routes of commute between major cities

FIG. 2F.25

PART G

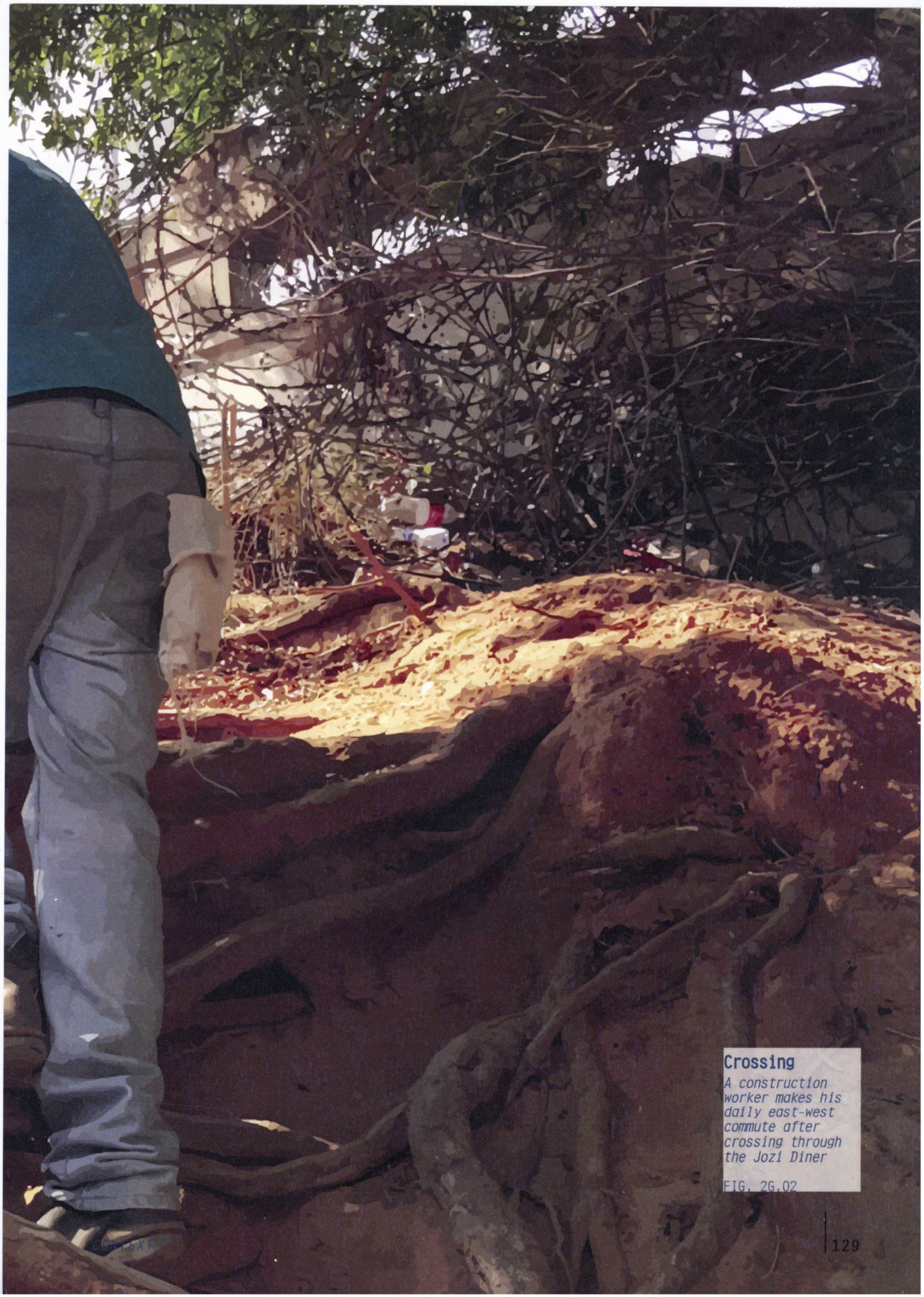
SITE SIGNIFICANCE

FIG. 2G.01

INACCESSIBILITY

A CONTEXTUAL PHOTO-ESSAY

The landscape has been manipulated to facilitate a contemporary urban lifestyle, allowing the vehicle of supermodernity to dominate the public realm. This condition fosters a neglect of fundamental human needs. As a result, a harsh and forgotten landscape emerges within the dusty, negative spaces in between. These circumstances exemplify the notion that private car ownership is essential to dignified access through Halfway House.



Crossing

A construction worker makes his daily east-west commute after crossing through the Jozi Diner

FIG. 2G.02

Departure

A family wait to board a bus en route to Mthatha for the long weekend away

FIG. 2G.03

Arrival
A couple from Bulawayo disembark in Gauteng for the very first time

FIG. 2G.04


N1 Pretoria

Pretoria, Johannesburg & the in-between

Pedestrians are forced to maneuver past barbed wire in order to cross the N1 highway

FIG. 2G.05

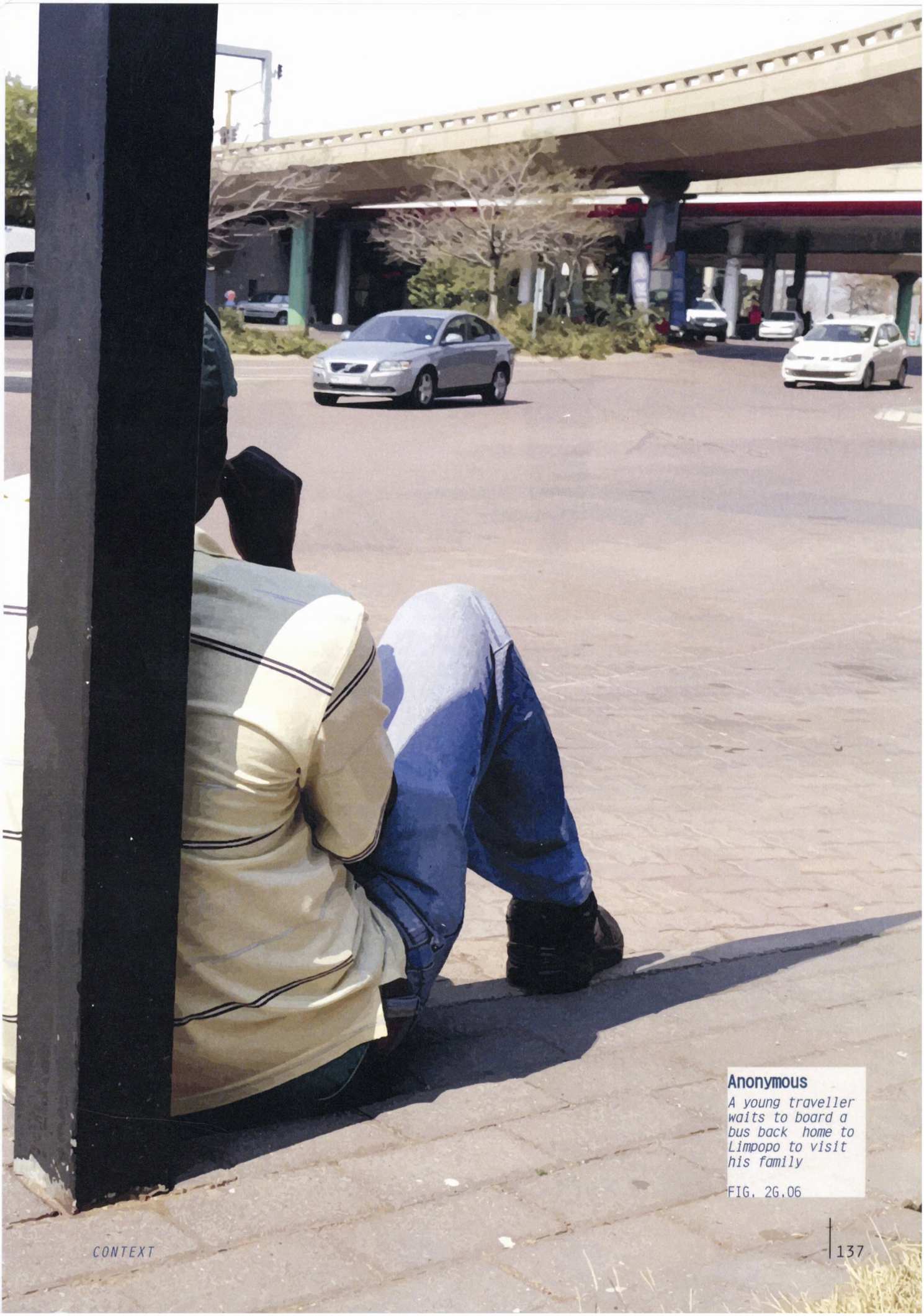
NARRATIVES OF PLACE

REVEALING THE ANONYMITY OF PLACE & USE

The opening essays of this dissertation explore how society today does not attribute much meaning to spaces of transit. The site of focus is indicative of such a space with it's primary function being a fuelling station and bus terminal.

These are spaces where paths of varying origins and destinations cross anonymously, unaware and independent of one another. These functions range in formality and user-accessibility due to the station's key position within the context of Gauteng. However, for each path the site performs a specific purpose.

This section identifies and maps the paths of various individuals encountered through the author's regular site visits. These narratives are further classified into categories in order to understand the current functions of the site and identify potential capabilities. It is from this investigation that the dissertation can begin to develop an architectural programme from which the design response draws on.



Anonymous

A young traveller waits to board a bus back home to Limpopo to visit his family

FIG. 2G.06

A Place of Work

For most, the interchange functions as a means to get somewhere else. However, for those who choose to make the site a place of work, it takes on new qualities.

FIG. 2G.07

Lionel

Stuck in traffic while returning home to Illovo after a meeting in Pretoria, a young businessman pulls into the parking lot to send a few emails.

Frequency:	*fortnightly*
Duration:	*20 minutes*
Distance Covered:	*0m*
Potential Deflection:	*200m*
Current Services:	*parking, toilet*
Potential Services:	*wi-fi connectivity*

Constance

A matriculant pauses to study on the grass embankment while walking home from Midrand High School.

Frequency:	*daily*
Duration:	*45 minutes*
Distance Covered:	*450m*
Potential Deflection:	*50m*
Current Services:	*shade, security*
Potential Services:	*study space*

A Place of Access

Interchanges are essentially spaces to facilitate access. However, they are deterministic in nature - ensuring the free flow of cars while marginalizing the pedestrian.

FIG. 2G.08

Jeffrey & Samuel

Two friends manoeuvre their bicycles through New Road's traffic, stopping occasionally at the Caltex garage to make repairs & pump up their tyres.

Frequency:	*daily*
Duration:	*10 minutes*
Distance Covered:	*350m*
Potential Deflection:	*120m*
Current Services:	*tools, oil & air*
Potential Services:	*bicycle lane & workshop*

Beverley & Sadie

Mother and daughter cross under New Road and over the Jozi Diner, picking up a milkshake on their way to Building Blocks Nursey School.

Frequency:	*weekly*
Duration:	*20 minutes*
Distance Covered:	*400m*
Potential Deflection:	*70m*
Current Services:	*carless crossing*
Potential Services:	*pedestrian walkaway & trade*

A Place of Departure

The site's eastern extent is often dense with pedestrian activity. This is because it contains the bus terminal which feeds the N1 South. Due to Midrand's locality along the national route, this terminal is often a site of pick-up and therefore serves more passengers.

FIG. 2G.09

Lukas & Emilia

A German couple travelling through South Africa await the arrival of their delayed bus on a winter's evening.

Frequency:	*once-off*
Duration:	*5,5 hours*
Distance Covered:	*350m*
Potential Deflection:	*500m*
Current Services:	*phone repair*
Potential Services:	*services, digital resource centre*

Garapo & Bvumira

Mother and son wait patiently to board a bus to Harare, where he will be introduced to his grandparents for the first time.

Frequency:	*once-off*
Duration:	*2 hours*
Distance Covered:	*200m*
Potential Deflection:	*150m*
Current Services:	*shade, food*
Potential Services:	*post office, trade, cinema*

A Place of Arrival

The western extent is less frequently accessed by pedestrians. The bus terminal which feeds the N1 North is often a site of drop-off towards the end of a traveller's journey. This is because here the route approaches South Africa's neighboring countries from the extensive coastal route.

FIG. 2G.10

Bongi

A recently unemployed motor mechanic arrives on the site at 3am in search for a new opportunity.

Frequency:	*bi-annually*
Duration:	*30 minutes*
Distance Covered:	*250m*
Potential Deflection:	*200m*
Current Services:	*shelter*
Potential Services:	*short-term accommodation*

Alexander

After catching the Gautrain into Midrand a British businessman steps out in Gauteng for the very first time.

Frequency:	*once off*
Duration:	*10 minutes*
Distance Covered:	*150m*
Potential Deflection:	*50m*
Current Services:	*bag assistance*
Potential Services:	arrival gateway *observatory*

A Place to Fuel

The structure of the New Road highway bridge forms two fuel stations, on either side of the N1. This popular stop serves a wide range of vehicles that need to be replenished twice a day.

FIG. 2G.11

Shadrack

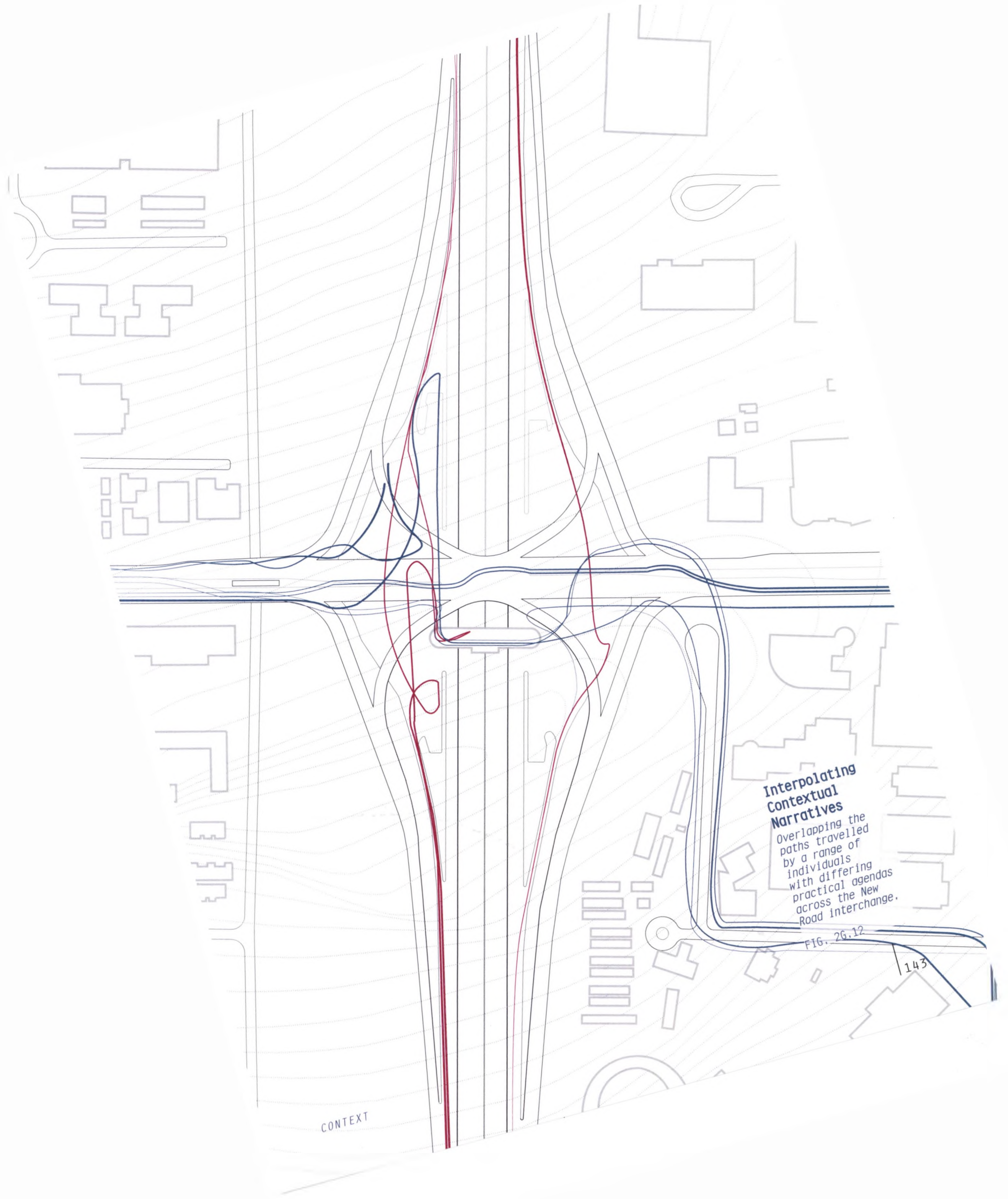
A Midrand-based businessman uses his lunch hour to fill up his vehicle and get his hair cut by an informal vendor operating on the site.

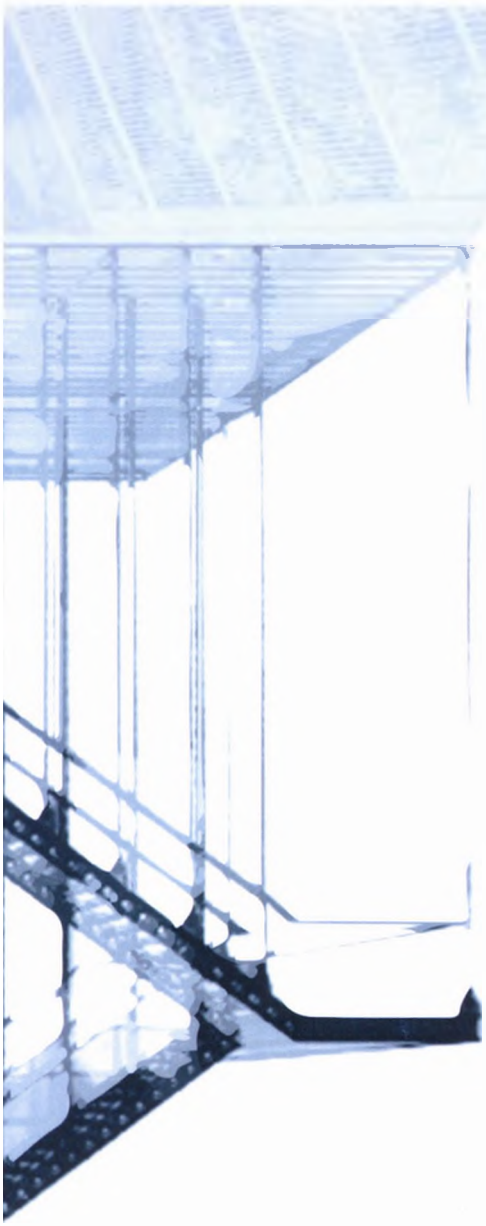
Frequency:	*fortnightly*
Duration:	*30 minutes*
Distance Covered:	*200m*
Potential Deflection:	*200m*
Current Services:	*petrol, barber*
Potential Services:	*service posts for vendors*

Patrick

A tired trucker stops to refuel and take on refreshments along his 12 hour freight route between Bloemfontein, Johannesburg, and Durban.

Frequency:	*weekly*
Duration:	*15 minutes*
Distance Covered:	*400m*
Potential Deflection:	*150m*
Current Services:	*petrol, toilet*
Potential Services:	*short-term accommodation*


Interpolating Contextual Narratives
Overlapping the paths travelled by a range of individuals with differing practical agendas across the New Road interchange.
CONTEXT



03
DESIGN RESPONSE

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FIG. 3H.01

PART H

BRIEF DEVELOPMENT

DESIGN SCOPE

PRIORITIZING THE PEDESTRIAN

Supermodernity dictates that contemporary urban arteries are no longer the rightful domain of pedestrians. There has been a significant shift in focus of public space from people to motorcars, with roads and parking lots adopting the city's key spaces. The social and practical problems arising from this condition disproportionately affect the most vulnerable populations.

This dissertation recognizes this disjunction. To date Midrand accounts for the most pedestrian traffic fatalities in South Africa. Hence, the design response aims to accommodate and restore dignity to the movement and activity across the key space of access identified within Halfway House. In doing so, the architecture essentially seeks to acknowledge and prioritize the pedestrian.

User Accessibility

Breaking down mobility hierarchy, the project looks to invert marginalised order of user accessibility.

FIG. 3H.02

REASSESSING ACCESS

When one examines the organisational structure of the South African street, something disconcerting appears: the infrastructure for cars is in the center, taking up the vast majority of road space. Meanwhile, the infrastructure for people -sidewalks, parkways, trees, benches- is literally pushed to the side. Designing within the edges of the road does not shift the aforementioned transit paradigm. For real change, we need bold moves that don't marginalize walking. The design response seeks to reinstate the pedestrian to the centre of the transportation system within this key space of access. In doing so, the design response seeks to create a lasting place for pedestrians, an identity bound in respectful meaning and time.

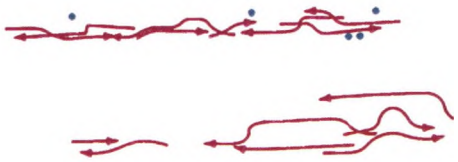
Life on the Edge

Recording pedestrain data along New Road

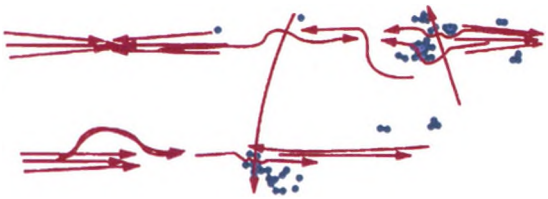
red arrows
-pedestrian paths
blue dots
-gathering points

FIG. 3H.03

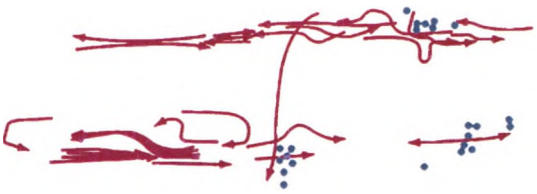
Sunday August 9th, 2015
2:30pm
40 people on site



Saturday August 29th, 2015
11:30am
36 people on site



Monday September 7th, 2015
6:30am
63 people on site



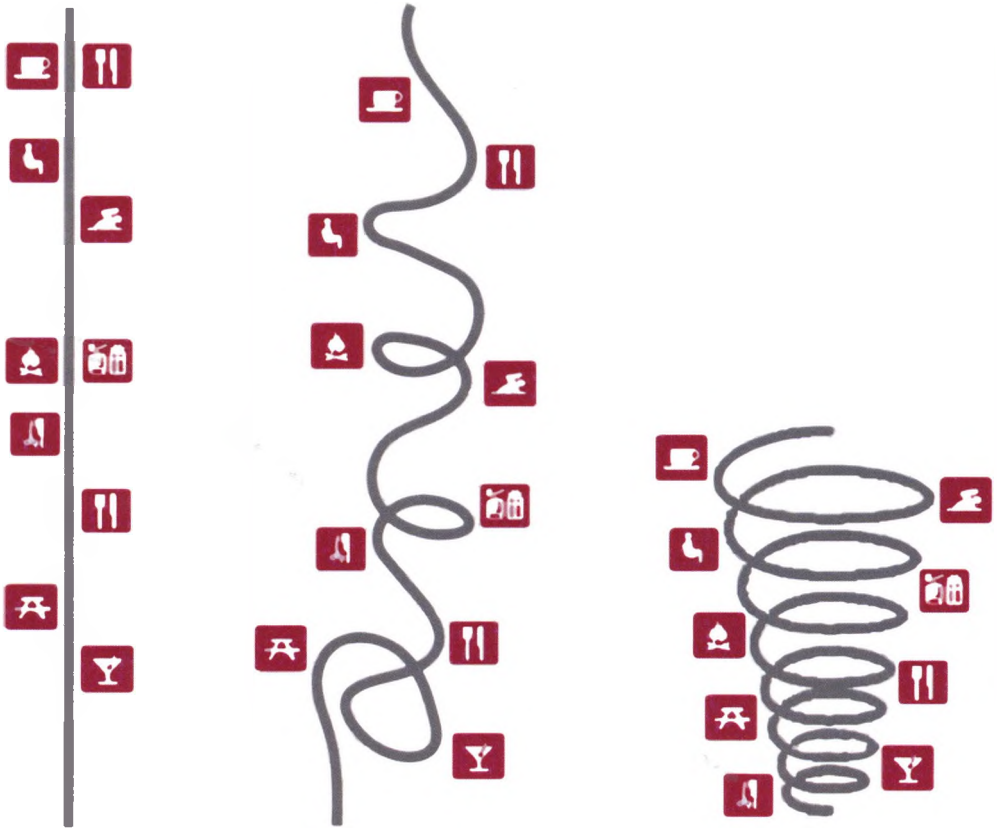
Thursday September 17th, 2015
5:00pm
68 people on site

PROGRAMME DEVELOPMENT

RE-IMAGINING THE ROADSIDE-INN

The roadside-inn has developed into the ultimate architectural symbol of our transient world. It is these stopping points that have traditionally developed as a connecting element to the fuel station. This symbiotic relationship is evident in the convenient stores, motels, and drive-inn cinemas - typologies of which exist globally. The supplementary programme housed alongside a particular fuelling station is largely dependant on its context. Due to the standardisation of fuelling stations, it is often the roadside-inn that act as the locally responsive element.

The design response is essentially conceptualized as a roadside-inn. Here, the proposal uses a popular highway fuel station as a counterpoint to the design. This architectural intervention within an existing infrastructure must use the contextual conditions as a programmatic driver. This is in opposition to the site's current roadside-inn which exists as a 1950's European-style Autogrill. Instead of living up to its original purpose, it now functions as an informal pedestrian bridge, facilitating access across the N1.



Collapsing Street

Conceptually the linearity of the urban street can be collapsed in order to accommodate a tighter, pedestrian-friendly programmatic layout.

FIG. 3H.04

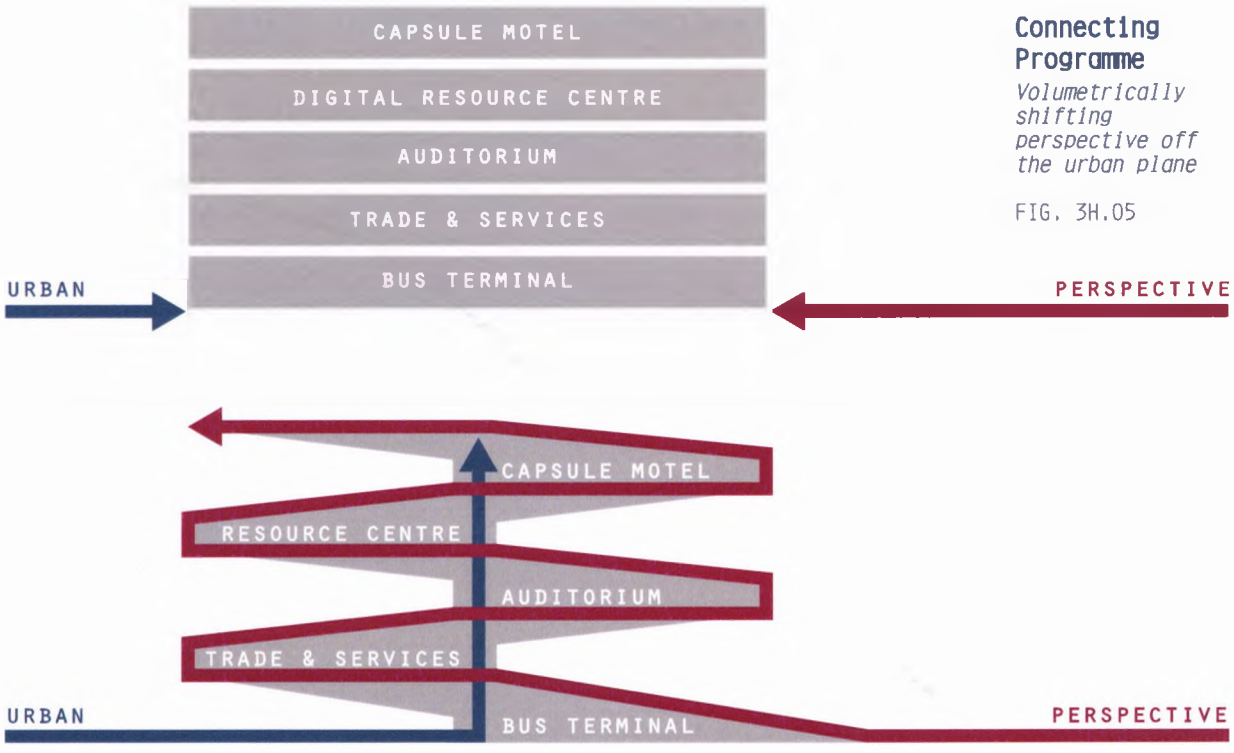
PEDESTRIAN [CAR] PARK

When is a car park not a car park? Structure rather than infrastructure? Building rather than road? When is a car park masquerading as a road, or a road masquerading as a car park?

The parking lot has developed into the sub-ecology of contemporary urban South Africa. It has become not only a character of our cities, but a structure with untapped potential for inventing new spaces and experiences. In this thesis proposal, the form of the car park is manipulated into spatial strategy that serves as an instrument for making an urban structure legible.

The ground plane of the site is essentially a parking lot, with a segment of it functioning as a fuel station. If the car park's surface can merge with the ground, the project can seek a scenario in which the parking structure could infuse cityspace. This typology can be used to reconfigure the perspective from which we experience our surroundings.

The interchange is thus transformed into platform that extends a public space vertically. Here, our perspective of our urban environment is lifted off the urban plane.



Connecting Programme

Volumetrically shifting perspective off the urban plane

FIG. 3H.05

DEFINING THE CORE PROGRAMME

In order to accommodate a wide range of user accessibility, the programmatic response is conceptualized through re-imagining roadside-inn typologies. In ensuring optimal contextual relevance, the accommodation schedule responds to the formal and informal activity that currently exists on the site. This has been principally derived from the preceding chapter, specifically the 'Narratives of Place' site study.

GATEWAY OBSERVATORY

Architecture has the capacity to facilitate a sense of grandeur on arrival to a metropolis. However, this gesture is all too often reserved for those fortunate enough to arrive at an airport or a European train station. The Gateway Observatory looks to provide a dignified place that can be used by everyone who arrives and departs to and from the site's popular bus transit service.

TRADE & SERVICES

Informal market places can often be found at key points of pedestrian crossing. This convenient shopping experience allows for transaction on the move as well as an array of 'while you wait repairs.' The trade stall and service posts acknowledges the forms of activity currently operational on the site and accommodates them.

ROADSIDE CINEMA

The Drive-Inn is a relic of Johannesburg's past, an iconic roadside-inn which has all but disappeared along with the city's enthusiasm for the motorcar. This carless Roadside Cinema is a gesture to this bygone tradition, allowing bus passengers to enjoy films while they wait (as well as marking the site as a destination in itself).

DIGITAL RESOURCE CENTRE

Despite the infrastructural weight of the site, it is a platform for mobility. The design scope focuses on pedestrian accessibility and the Digital Resource Centre thus enables the site to become a place of digital accessibility. Here, users can connect to online networks while waiting for transportation or pull over to work in the facility when stuck in traffic.

CAPSULE MOTEL

Petrol stations and bus terminals function on a 24-hour cycle. The Capsule Motel allows low-rate short-term accommodation for passengers arriving and departing within the early hours of the morning, as well as providing refuge for tired truckers and long-distance motorists in need of rest.

Interpolationg Typology

Re-interpreting programme precedent - applying contextually relevant functions (right)

FIG.3H.06

TRADE + SERVICES	
Trading Stalls	**520m²**
24xStalls	240m²
Public Plaza	200m²
Kiosk	30m²
Storage + Cold Room	50m²
Service Posts	**210m²**
Cellphone Repairs	30m²
Locksmith	40m²
Barber	60m²
Printing Workshop	45m²
Information Office	15m²
Storage	20m²

10 %

KNOWLEDGE + RECREATION	
Participation Facilities	**1 830m²**
Roadside Cinema	650m²
Wi-Fi Station	200m²
Media Centre	350m²
Digital Library	480m²
Foyer	40m²
In & Out desk	16m²
Admin + Management offices	20m²
Staff Room	12m²
Storage	20m²
Sorting Room	15m²
Deliveries + Arrivals	15m²
Staff Lounge	12m²

25 %

BUS TERMINAL	
Pick-up Gateway Observatory	**855m²**
Ticket Office	80m²
Johannesburg Observation Tower	560m²
Vertical Circulation	120m²
Service Ducts	95m²
Drop-off Gateway Observatory	**705m²**
Ticket Office	70m²
Pretoria Observation Tower	460m²
Vertical Circulation	90m²
Service Ducts	85m²

22 %

HALFWAY HOUSE
ACCOMMODATION SHEDULE

CAPSULE MOTEL	
Restaurant	**300m²**
Seating Area	120m²
Kitchen	60m²
Cafe	95m²
Storage	25m²
Accommodation	**805m²**
21xRooms	640m²
Common Room	80m²
Reception	45m²
Storage	40m²

15 %

SERVICING	
Amenities	**150m²**
Services Access	13m²
Loading Bay	13m²
Plant Room	100m²
Security Office	25m²
Locker Rooms	**415m²**
Toilets	180m²
Lockers	50m²
Showers	85m²
Changing Roooms	100m²

08 %

MOBILITY	
Bicycle-Sharing Hub	**480m²**
Bicycle Storage Rack	200m²
Bicycle Repair Workshop	140m²
Bicycle Retail	40m²
Storage	100m²
Pedestrian Link	**970m²**
Primary South-West Concourse	780m²
Supplementry Links & Ramps	190m²

14 %

Calculating Capacity
Breaking down the accommodation schedule according to site capacity and viability analysis (above)

FIG. 3H.07

ROADSIDE-INN TYPOLOGY

BUS TERMINAL

GATEWAY OBSERVATORY

CONVENIENCE RETAIL STORE

TRADE & SERVICES

DRIVE INN

ROADSIDE CINEMA

DRIVE THRU

DIGITAL RESOURCE CENTRE

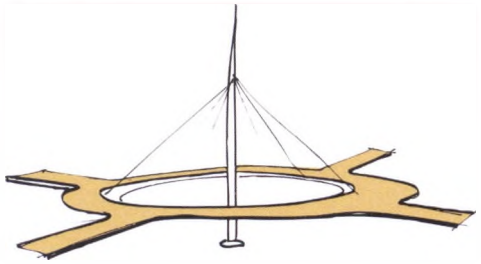
SHORT TERM ACCOMODATION

CAPSULE MOTEL

CONTEXTUAL IMPLEMENTATION

PRECEDENT ANALYSES

CONCOURSE ARCHITECTURE



HOVENRING

Location: Eindhoven, Netherlands
Year: 2008-2012
Architect: ipv Delft

This case study makes use of a foreign precedent, within a formal pedestrian culture. The site sits at an infrastructural space of intersection, where vehicular traffic dominates the landscape.

Elevating the Pedestrian Plane

Four perspectives of the site from Heerbaan street and a photo from a cyclist's view

FIG. 3H.08

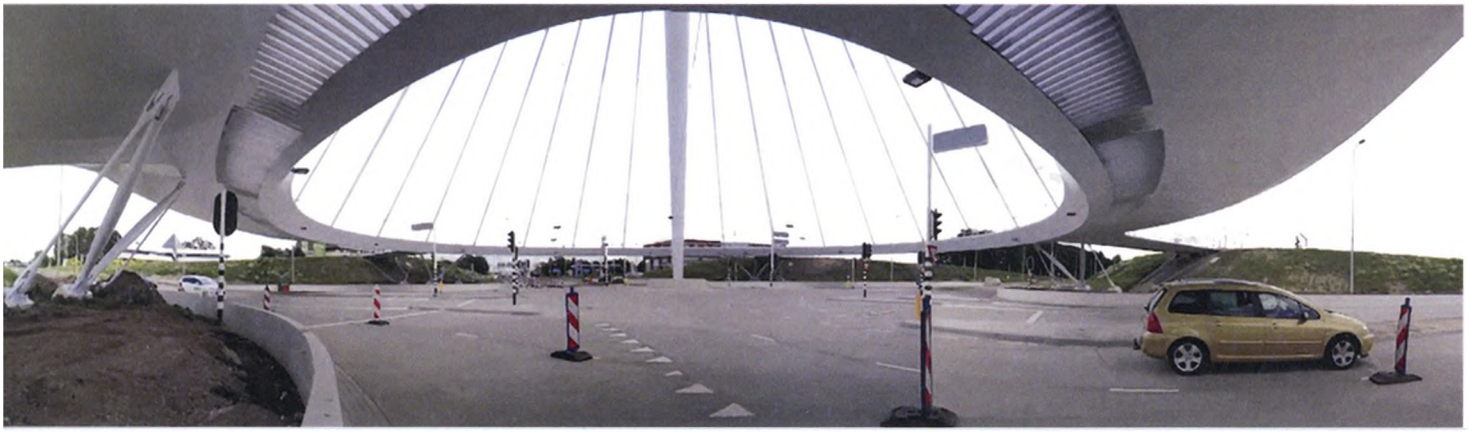
A SPACE OF INTERSECTION

The Netherlands is famed for its pioneering approach to cycling. At the intersection between Heerbaan and Meerenakkerweg streets, on the border of Eindhoven and Veldhoven, is a suspended bicycle roundabout bridge – the first of its kind.

The design provides an engineered solution to a human-scale hindrance. This innovative solution is appropriate given the area's rich industrial design history. It was constructed when the housing nearby increased and dealing with the high traffic on it was a necessity.

PROJECT VIABILTY

The Eindhoven City Council is the primary stakeholder who requested, promoted and paid for the project. They realized the problem in the area and initiated the solution. Not wanting a traditional cyclist underpass or a level crossing again, they approached the IPV Delft group for possible solutions. Characteristic of their work is efficient performance achieved through simple solutions and materials.



SUSPENDING STRUCTURE

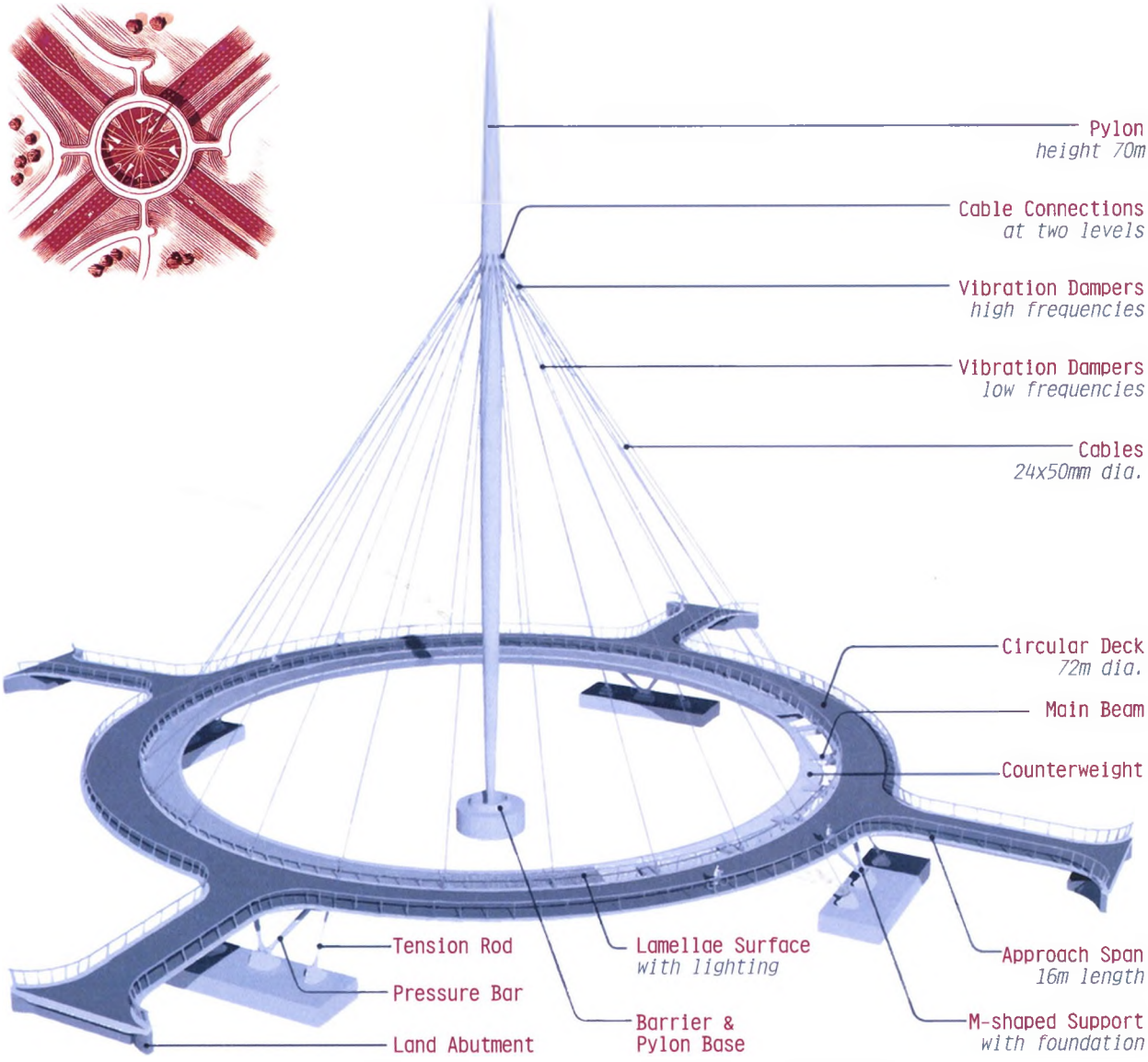
The Hovenring is essentially a suspended bridge. It is composed by a 72 metres diameter deck and is suspended from a 70 metres tall central pylon by 24 cables. The entire construction is made of steel. To ensure stability, concrete was added to sections of the bridge deck as well.

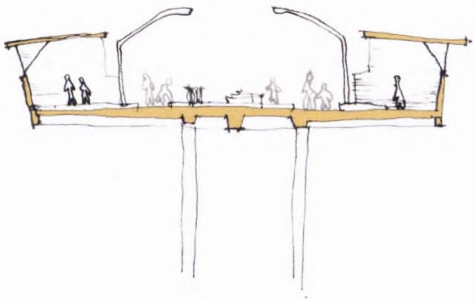
One of the challenges of the design process was the spacial integration. The existing infrastructure and buildings set the boundaries for the grades of the slopes leading up to the roundabout. As space was limited, it was decided to lower the ground level of the intersection underneath by a metre and a half, allowing for a comfortable slope for pedestrians and cyclists.

This innovative way of managing traffic flows has proved successful. Since its construction this novel concept has been exported to range of foreign context. Similar Pedestrian rings include the Tjensvollkrysset in Stavanger (Norway), the Lujiazui in Shanghai (China), and the Kol'tso in Rzeszowie (Poland).

Tectonics & Stability
Structural components diagram

FIG. 3H.09





WARWICK JUNCTION

Location: Berea, Durban
Year: 1998-
Architect: Richard Dobson
Thekwini Regeneration & Urban Management programme leader

This case study investigates a local precedent within a transportation hub. Public space and infrastructure have been used to accommodate places for trade.

Bridging Infrastructure & Public Space

Pedestrian overpass across the junction of Market Street & Market Road

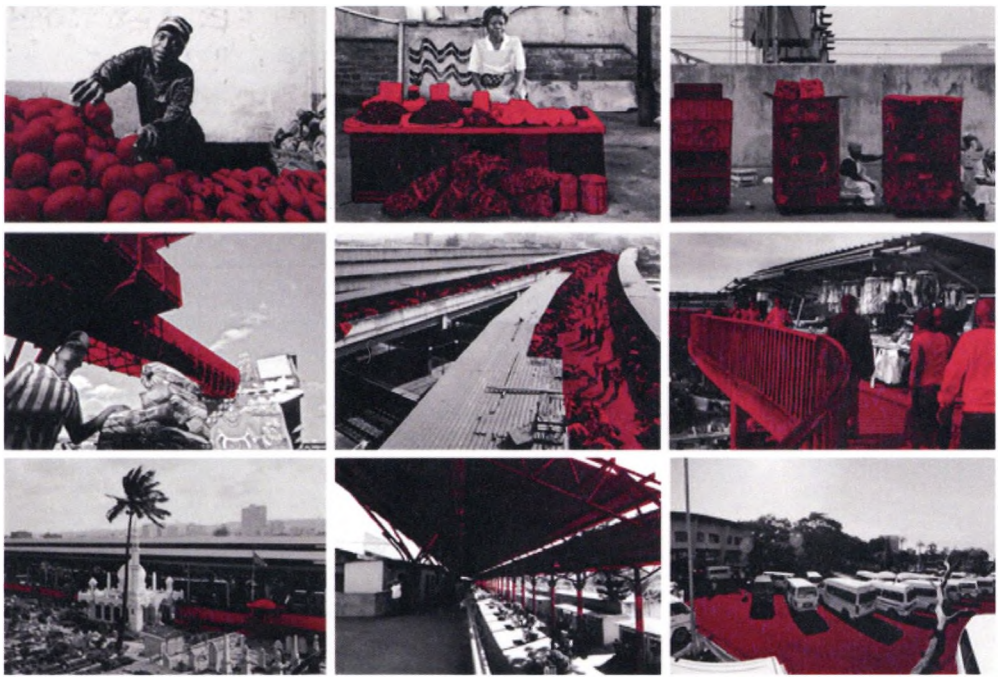
FIG. 3H.10

ACCOMMODATING CAPACITY

Warwick Junction is Berea's primary transport hub, facilitating 460,000 commuters a day whilst accommodating 5,000 markets traders. The project has regenerated an area which became notoriously unsafe and neglected through Apartheid.

PROJECT VIABILITY

After the fall of Apartheid in 1990, the local municipality highlighted nine inner-city districts for sustainable development. Warwick Junction was named as the primary catalyst for this regeneration process which became known as the iTRUMP Program. The incorporation of the informal economy into the greater urban context required stakeholder participation. In order to facilitate this process, Asiye eTafuleni, a nonprofit group, was set up to led a bottom-up approach, consulting formal and informal businesses and commuters to overcome gender, cultural, and racial biases.



Accommodating a Place of Trade

Architecture used as a mechanism to support an existing informal trade network

FIG. 3H.11

INFORMALITY & PUBLIC SPACE

Warwick Junction's inventive use of public space is immediately evident in the re-interpreted roles of the pavement and street. The traders seized the opportunity of using the sidewalks for trading, storage and living, whereas the street surface was repurposed as the primary pedestrian thoroughfare.

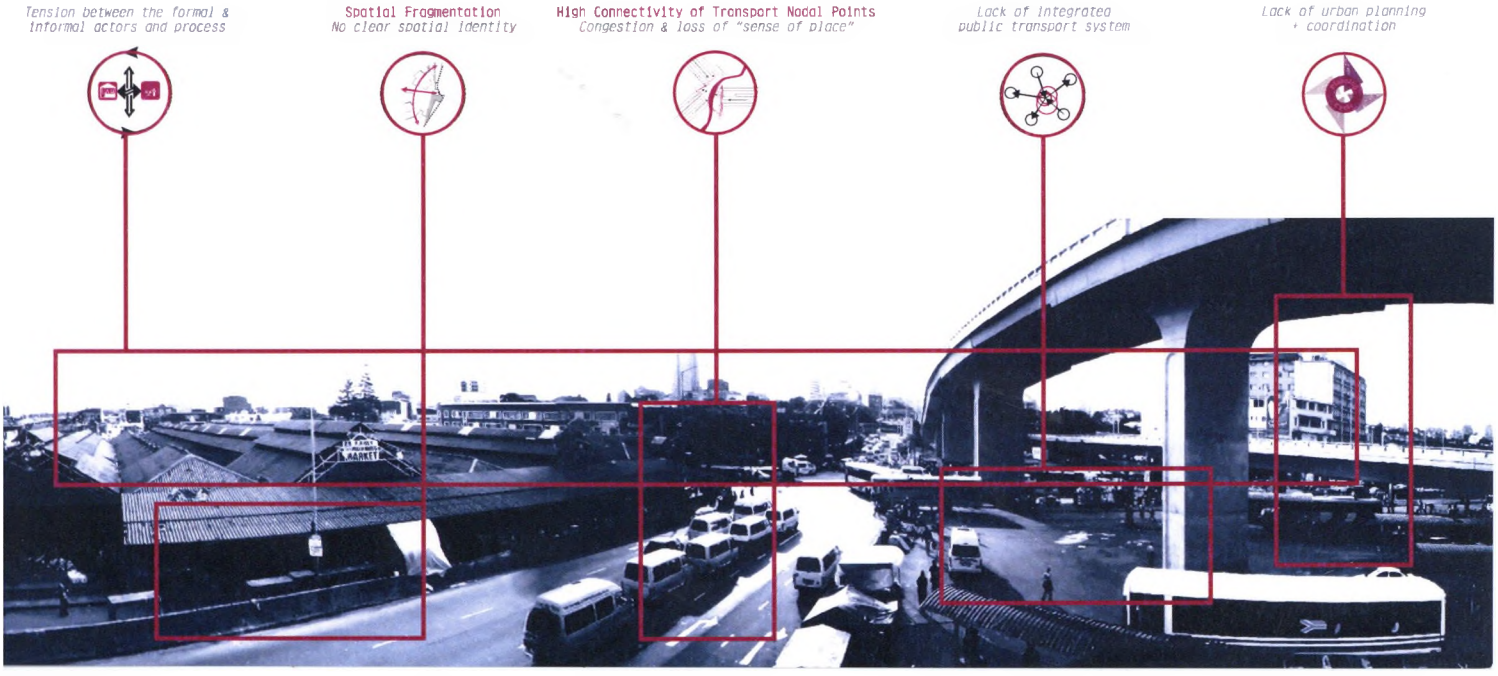
A fundamental factor in the sustainability of the market was the health department's decision to formally recognise the importance of the site's social and cultural activity to the city. It was this acknowledgement that led to the decision to engage with rather than try to exclude the informal traders.

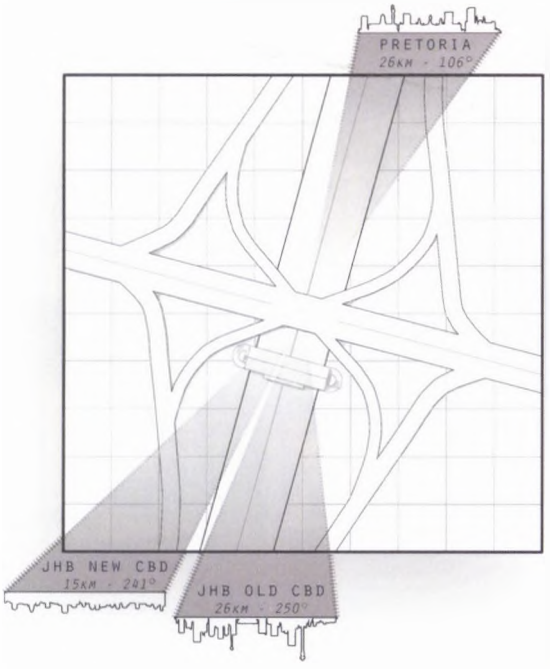
Finally, the case study recognises highway infrastructure as an untapped urban resource. The project eases Berea's pedestrian and vehicular traffic congestion and has reduced criminal activity in what was previously a violent and hostile environment. These benefits have enabled Warwick Junction to become a catalytic project around which sustainable schemes have since been able to develop from (Dobson; Skinner & Nicholson 2009, p.63).

Tectonics & Framework

Analyzing the existing urban conditions beneath the N3 underpass

FIG. 3H.12





PART I

DESIGN DEVELOPMENT

FIG. 3I.01

CONCEPTUAL EXPLORATIONS

ARRANGING SATELLITES THROUGH CONTEXTUAL FORCES

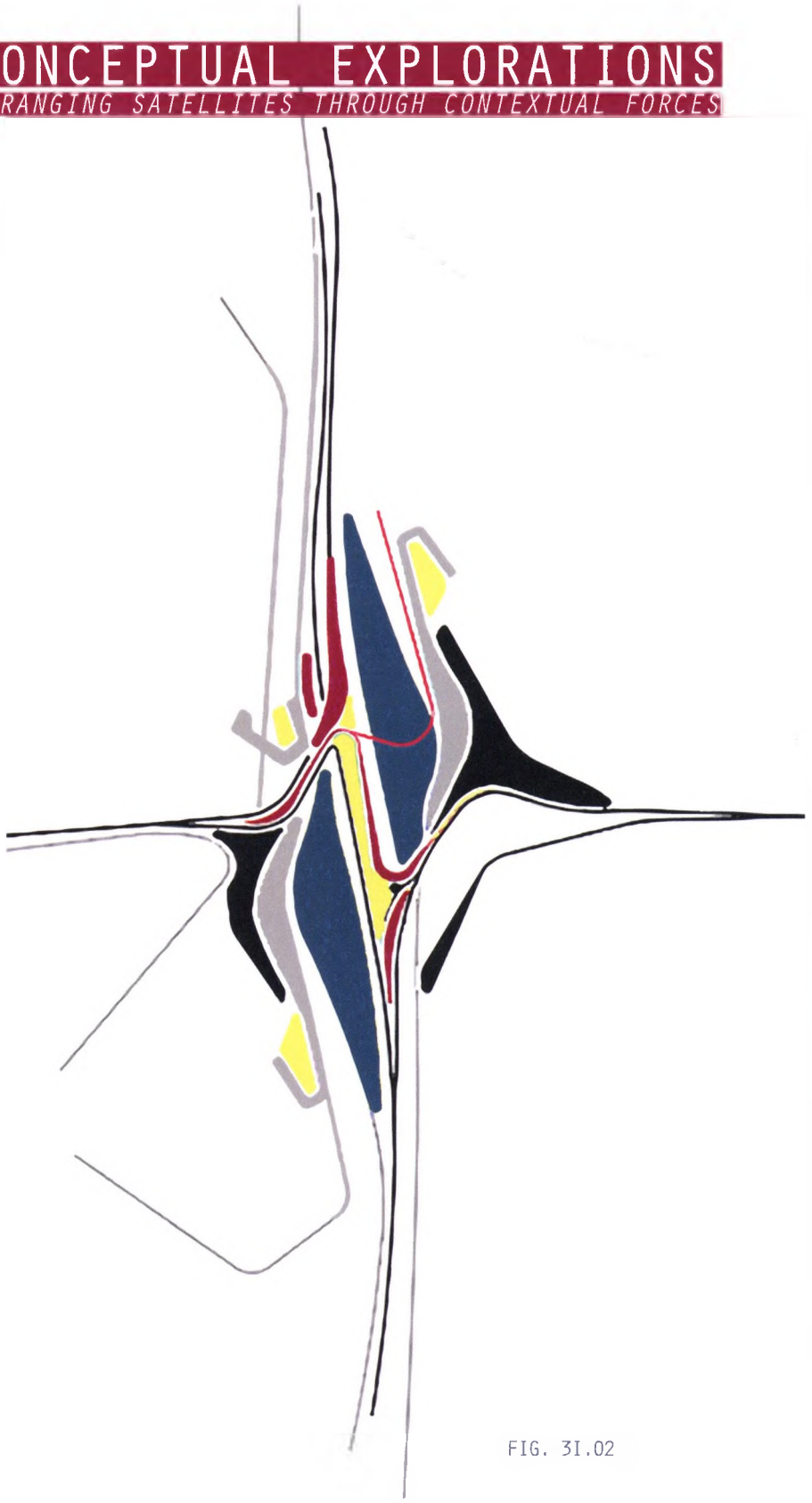


FIG. 3I.02

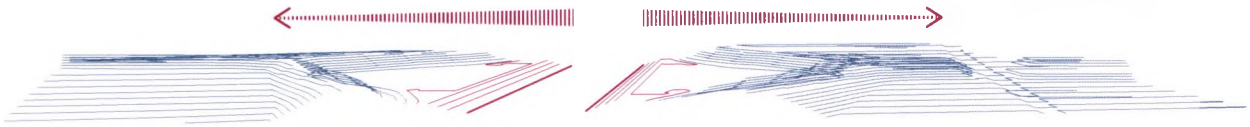
PRIMARY DESIGN DRIVERS

The catalytic concept dictates that the design response will take the form of a responsive connective element across what is currently a segmented landscape. This is essentailly a series of satellites.

What follows is a sequence of the primary concepts explored throughout the design process, all of which have significantly contributed to the final response.

RECOVERING THE LANDSCAPE

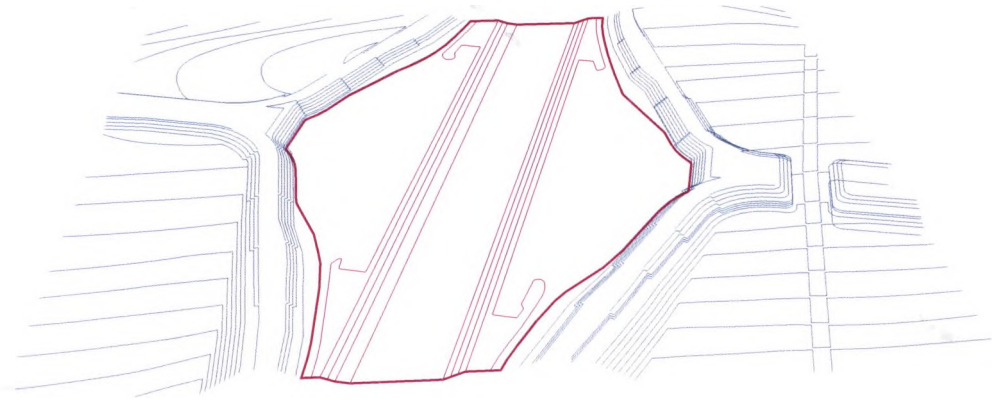
The highway is essentially an 'as the crow flies' cut through the landscape. In order to accommodate this national road and its supplementary on and off ramp, the natural fall of the land has been manipulated into a series of embankments. The design seeks to reconnect and recover the authenticity of the landscape.



Swath Cut

The Ben Schoeman Highway bisects the land of Halfway House

FIG. 3I.03



Reconstructing Landscape

Line axonometric of the site's natural contours, and re-formed embankments & ground plane

FIG. 3I.04

ARCHITECTURE//INFRASTRUCTURE

Instead of looking to create a *landscraper*, a horizontal megastructure, the design responds as a series of carefully considered architectural interventions along a infrastructural urban gesture. This is conceived as a series of gems along a responsive cord.

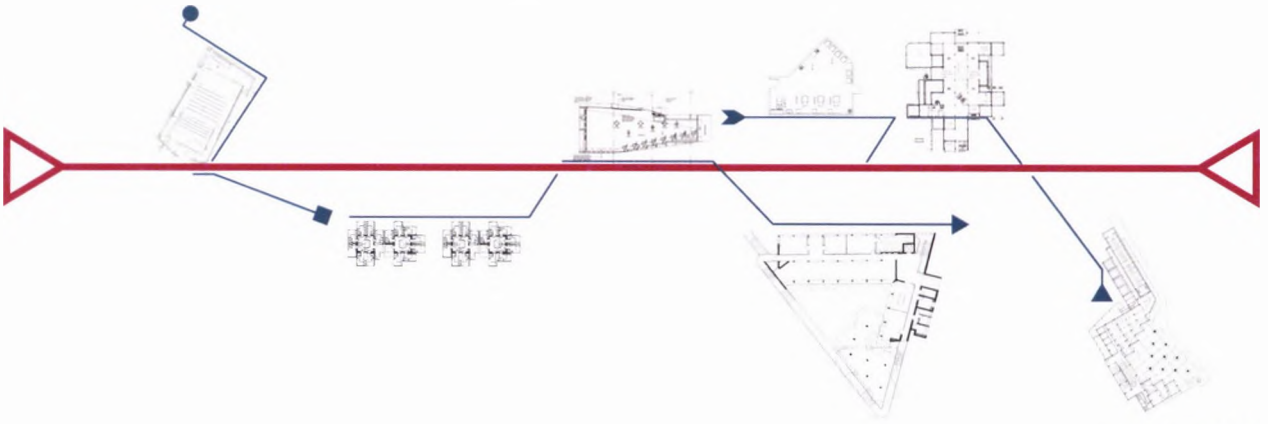


FIG. 3I.05

ENGAGEMENT THROUGH SPEED

Changes in pace can alter how we understand our context, thus the design will be formed by observation at different speeds. At different speeds, one is made aware of different scales. Thus, the design must respond to a range from ethereal sky to the ingenious landscape.

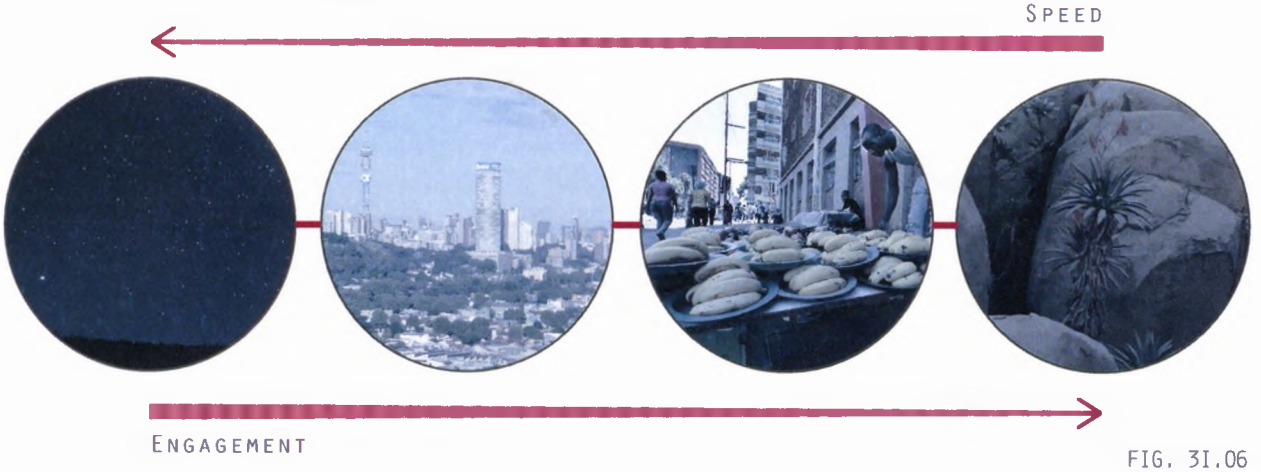


FIG. 3I.06

Re-forming Programme

Two new programmatic forms are conceptualized as markers of mobility and place

SHAREWAY HUB

The shareway is offered as an alternative practice to the highway in order to envision the future of mobility hubs as civic-minded and open spaces. It allows the individuals to re-engage and rediscover the principles of time and space. The outcome is a revision of an edge city. Hence, it marks an edge-of-city for commuting motorists, who instead stop at a park & ride terminus where they shift from their privatised mode of transport before heading through to their respective terminus. Alternatively, the system is also available to those who arrive by bus and are looking to move on to a connecting transportation link along New Road. Each link comprises of an active storage rack to facilitate this network of resource sharing.

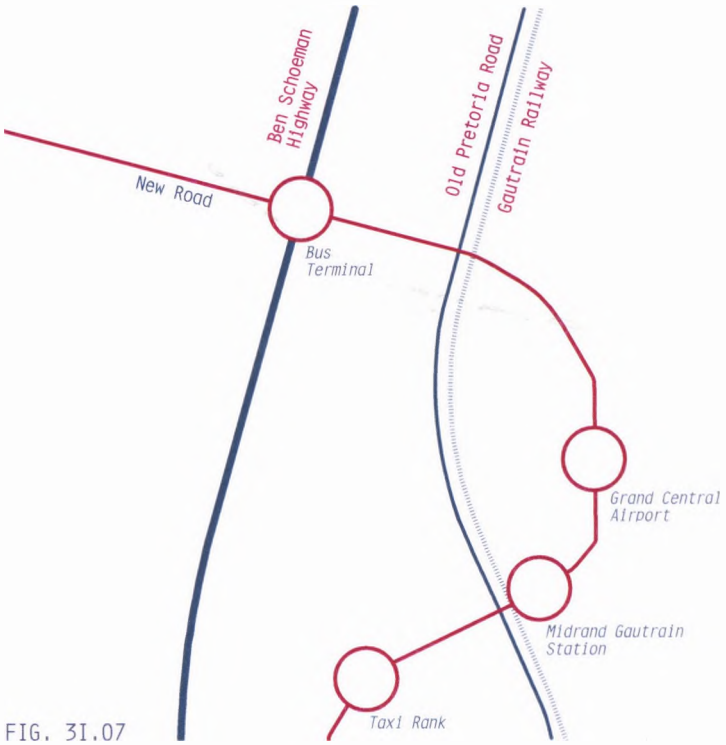


FIG. 3I.07

URBAN OBSERVATORY

An observatory has the potential to provide the architectural framework through which place is acknowledged. This could be possible through the active and passive reading and recording of the natural phenomena, landscape, and civic patterns: making visible the invisible networks. Creating a framework raises the urbanite to a different level of perception. This concept identifies the scope of the architectural exploration in order to focus on ideas about what the architecture of observation in the urban context is.

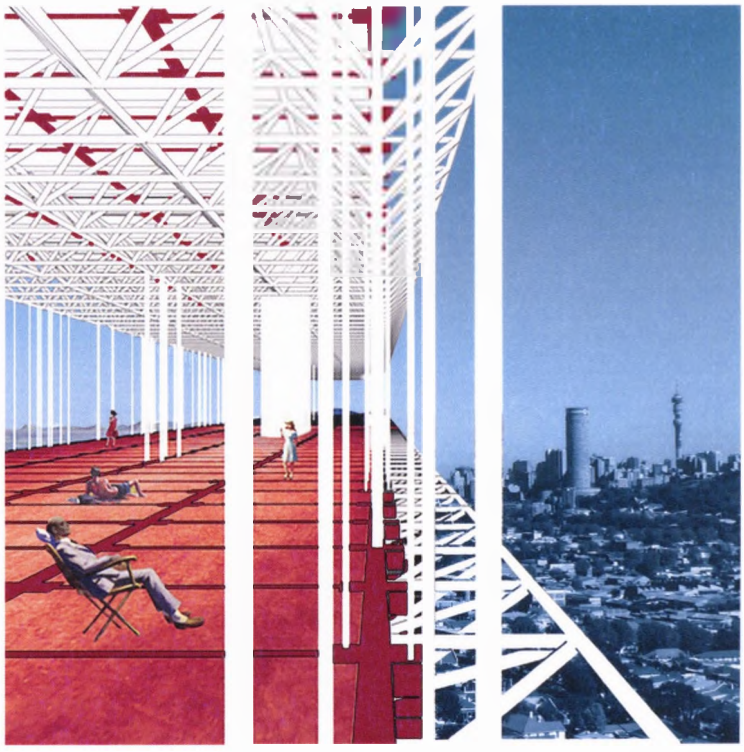
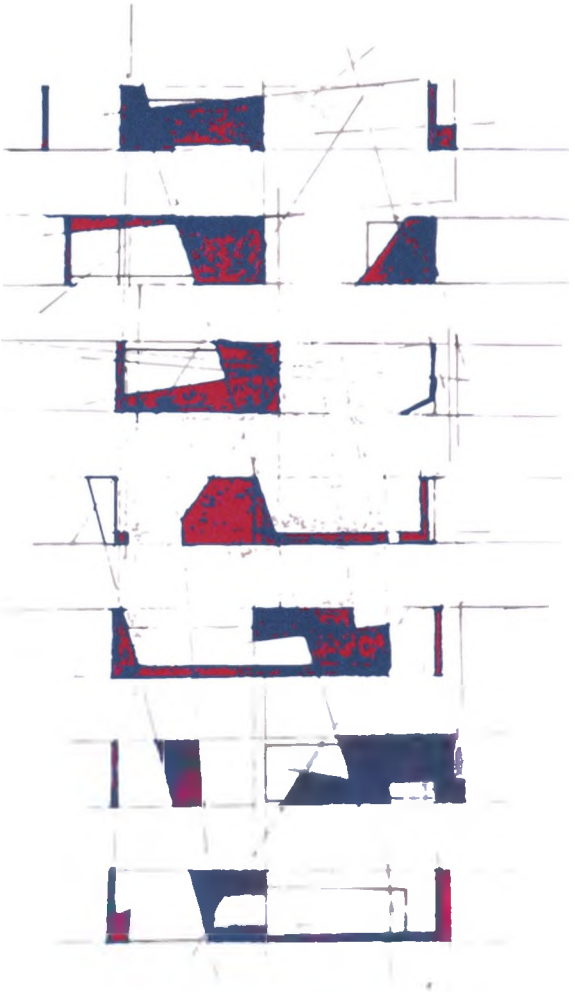


FIG. 3I.08

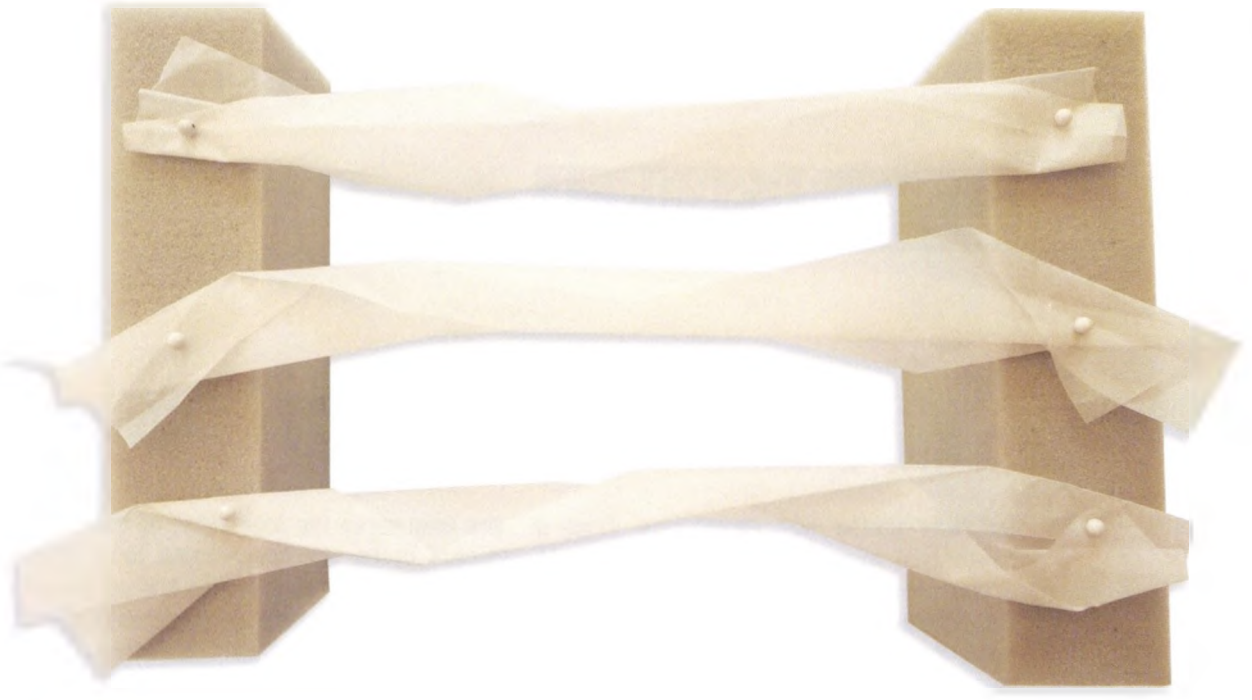


CONTEXTUAL FORCES

FIG. 3I.09

REACTIVE CONCOURSE

FIG. 3I.10



Lightweight Linkage

Using sketch models to bridge a spacial divide and respond to contextual forces along the folds

FIG. 3I.11

SITE DRIVERS

New Road with its mobility links has the potential to make a connection over this roadway link. This connection has the possibility to become a physical and conscious place.

In order to ensure an authentic connection across the landscape, the link must respond to a range of site drivers. This includes points of visual and physical access and obstruction, as well as how particular natural elements interact with the site.

RESPONSIVE CONNECTOR

The project will take the form of a responsive connective element rather than a bridge, which by nature, systematically joins two points without regarding terrain. A bridge is a solution but not the responsive solution. Instead, the project seeks to trace a path dictated by forces on the site.

The architecture is translated as a lightweight parasitic structure which is supported by the site's existing infrastructure.

Parasitic Platform

Conceptual elevation sketch

FIG. 3I.12

SITE RESPONSE
BRIDGING THE PUBLIC REALM

CORRIDOR OF ACCESS

Halfway House has developed from a historical place of pause into a rapidly urbanising space of buffer between the Ben Schoeman Highway and the Old Pretoria Main Road. This built fabric divides Midrand's affluent western suburbs from Midrand's impoverished eastern areas.

New Road marks the sole point of east-west access along the north-south orientated landscape. However, due to the nature of the interchange, pedestrian accessibility is severely burdensome. Therefore, this corridor is identified for mediation in order to bridge socioeconomic instability.

A PLACE OF ACCESSIBILITY

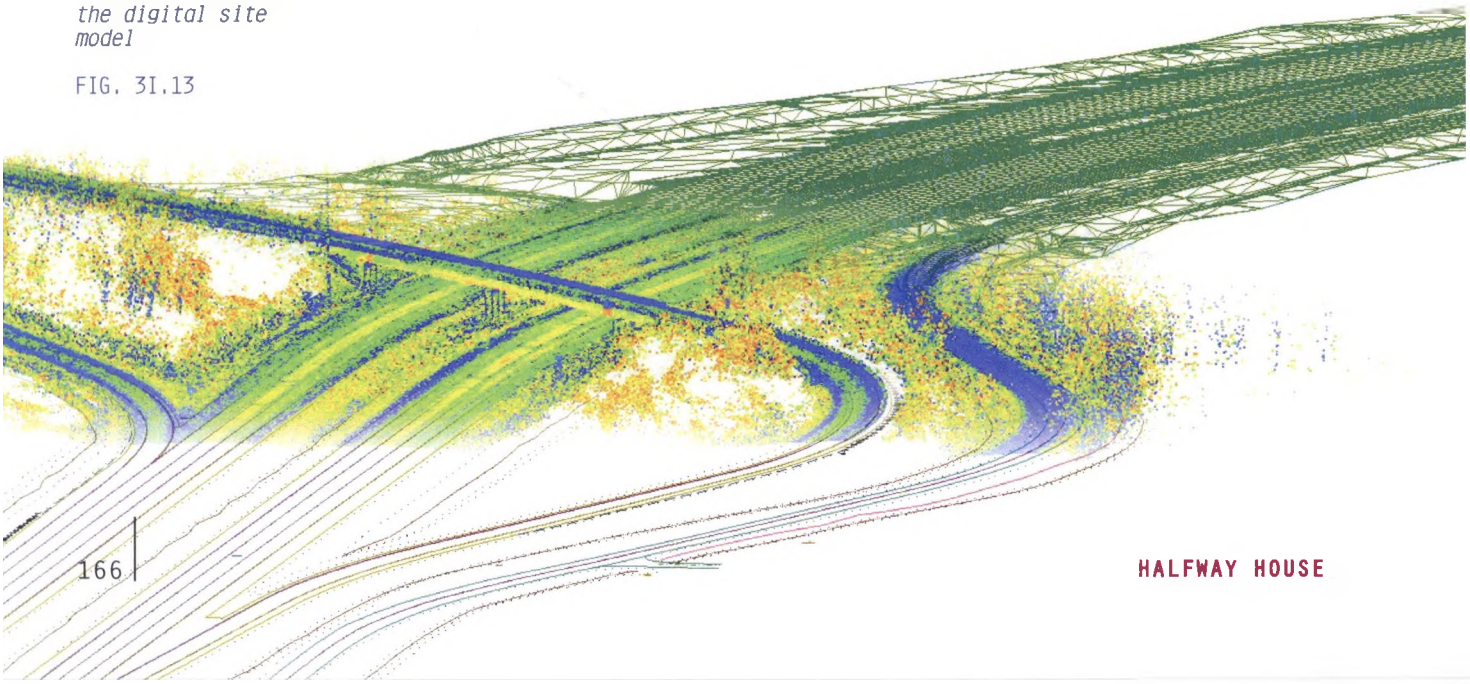
The site is a product of the highway, which in turn is a product of accessibility. However, accessibility is a subjective matter. In the case of Halfway House, the construction of the N1 highway has critically strained pedestrian access across this highway. The design must look to prioritize pedestrian access in this vehicle dominated landscape.

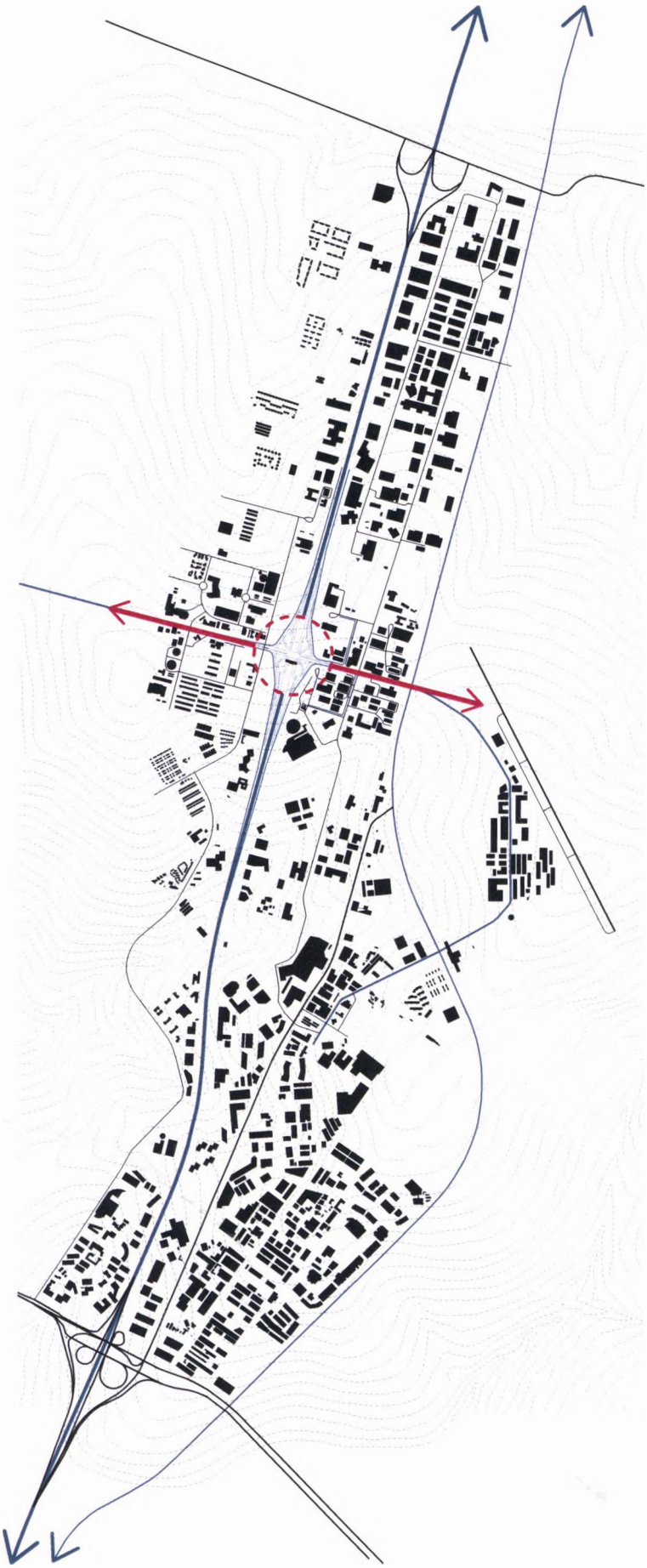
A PLACE OF ACCOMMODATION

The site is a key link in an intricate pre-existing pedestrian network. However, within this network, seldom is formally integrated. Thus, there has been an emergence of informal routes and retail opportunities across the site. The design must take these current structures into consideration when looking to prioritize and accommodate them.

Reconceptualising a Place of Interchange
Contextual energy visualized within the digital site model

FIG. 3I.13



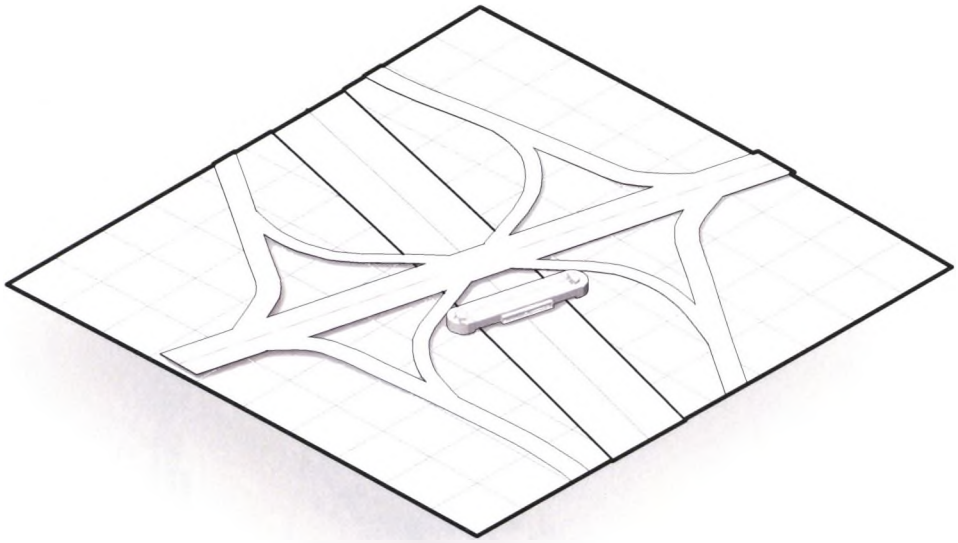


Bilateral Corridor

Creating a place of east-west access within a strip of north-south urbanity

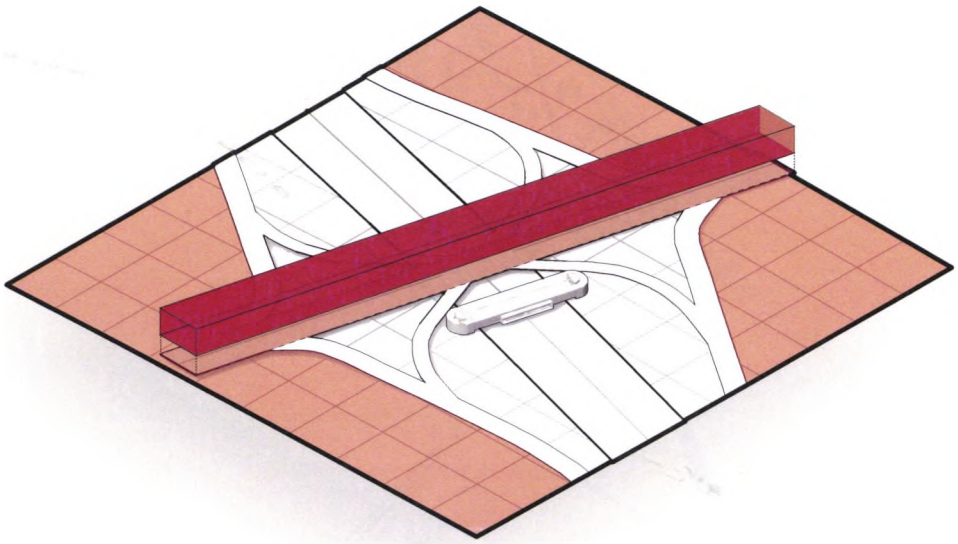
FIG. 3I.14

MASSING A PLACE OF INTERVENTION



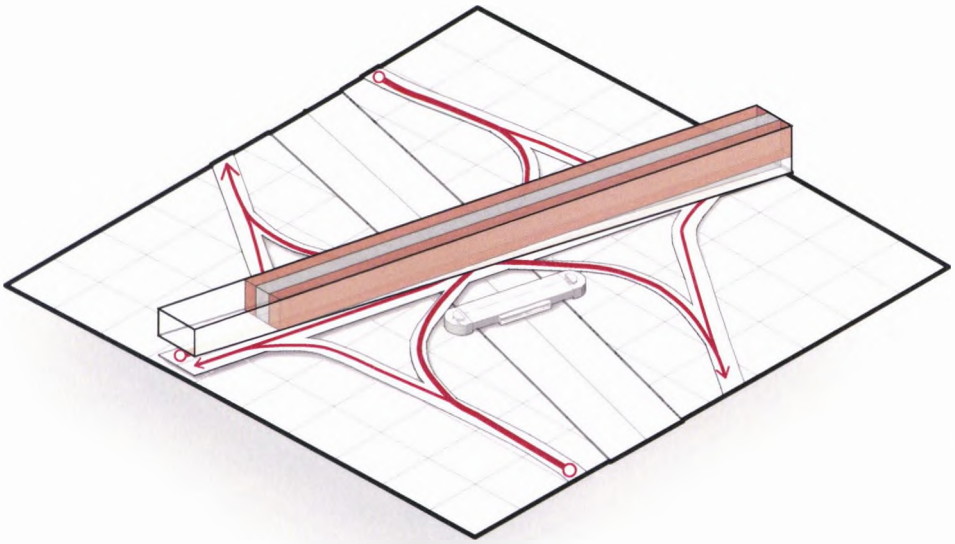
Site Isolation
Through isolating the geography of the New Road interchange, the surface land isolated by the infrastructural configuration becomes a site of strategic intervention.

FIG. 3I.15



Connective Element
On either side of this buffer lies socially contrasting conditions orphaned by the highway. The project will take the form of a responsive connective element across the landscape.

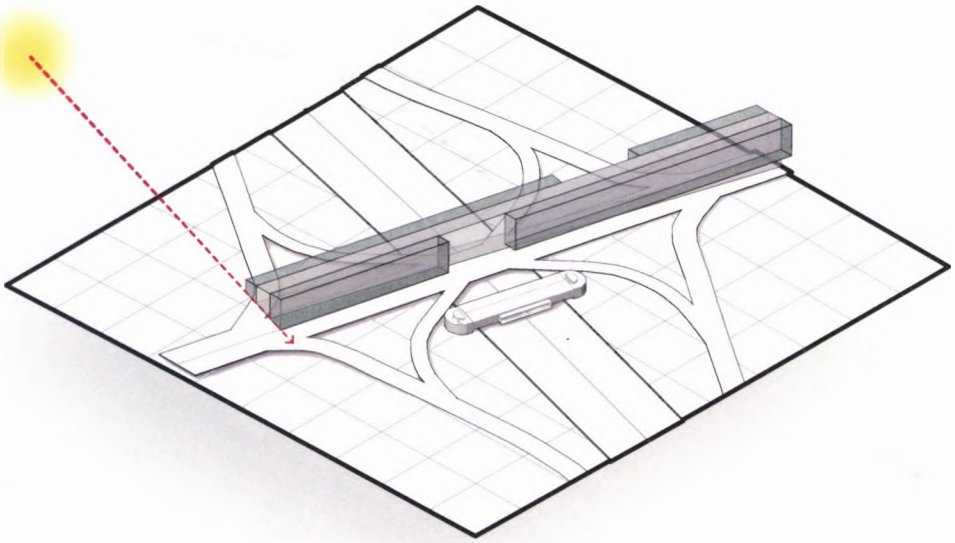
FIG. 3I.16



Responsive Spine

Circulation forms through a central spine with the supporting programme along either end for maximum visual exposure.

FIG. 3I.17



Site Forces

The resulting mass then responds to a range of contextual forces such as access & annual sun angles.

FIG. 3I.18

3RD ROAD
NORTH-SOUTH MIDRAND PEDESTRIAN LINK
DROP-OFF
BUS TERMINAL
CONDUCIVE TO PRIVACY
NOISE & VISUAL
EXPOSURE AT MIN.
JHB NEW CBD
15KM - 241°

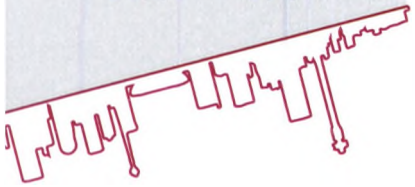
PRETORIA
26KM - 106°

ACCESSIBLE POINT
VISUAL CONNECTIVITY

PICK-UP
BUS TERMINAL

BAVERIA AVE
TEMBISA PEDESTRIAN LINK

JHB OLD CBD
26KM - 250°



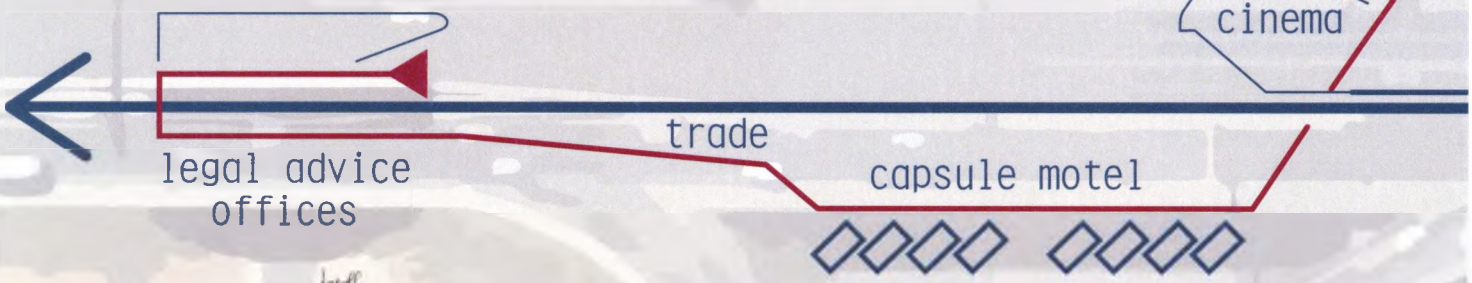
Contextual Forces
Identifying the key site defining elements

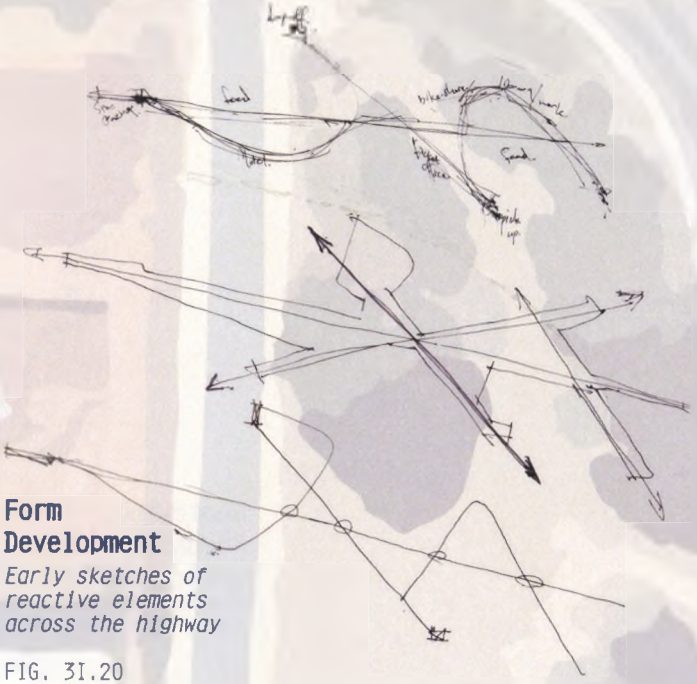
FIG. 3I.19

PROGRAMME ORGANISATION

The programme is driven to accommodate a space of arrival and departure, rest stop, and point of access.

An elevated pedestrian bridge forms the central spine. Alternative paths break off this central axis along which several supplementary facilities are organised according to contextual forces. These satellites range in user engagement and include points for access, arrival, departure, trade, services, storage, public gathering, short term leisure and accommodation.

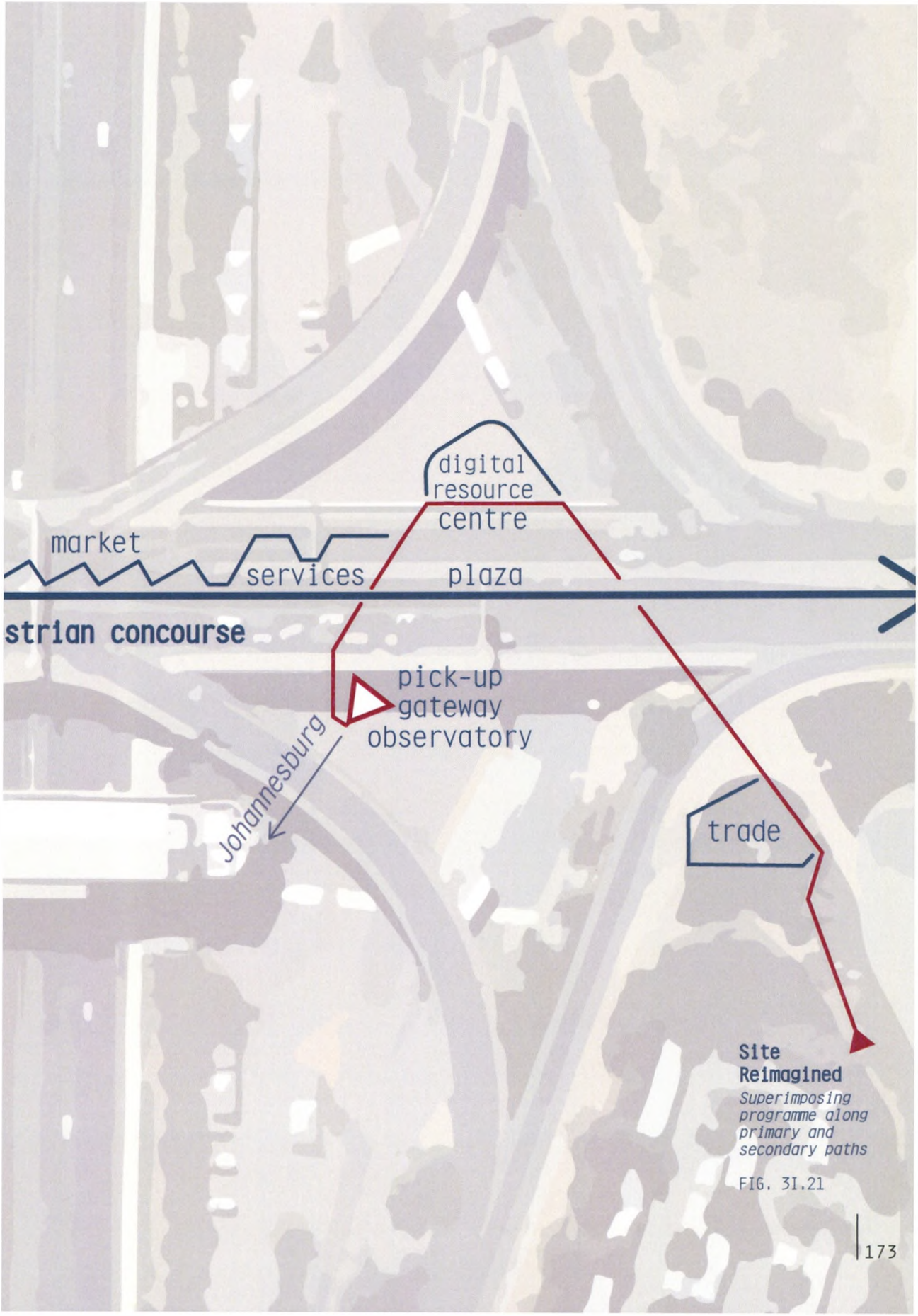




Form Development

Early sketches of reactive elements across the highway

FIG. 3I.20



Site Reimagined

Superimposing programme along primary and secondary paths

FIG. 3I.21

SKETCH DESIGN

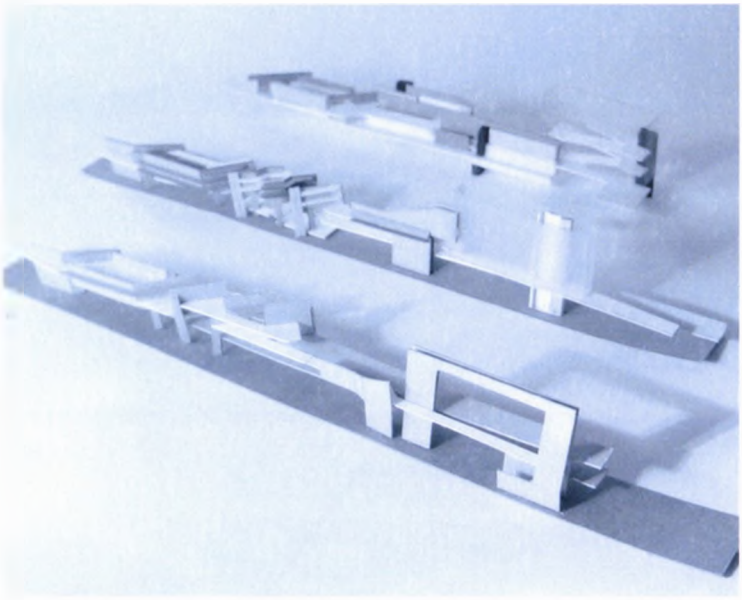
Programmatic Layering

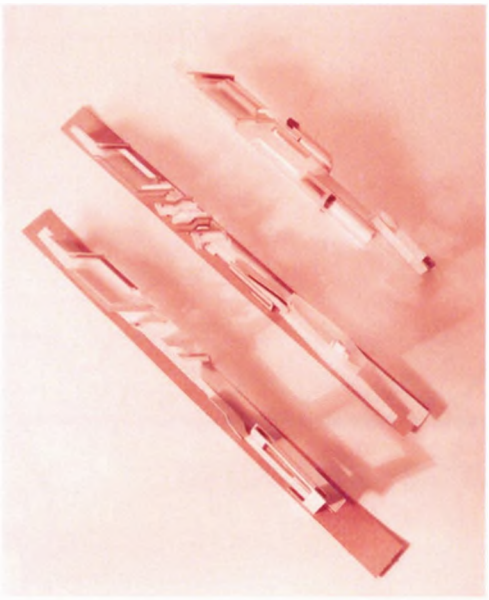
Reconceptualising New Road as a new pedestrian spine

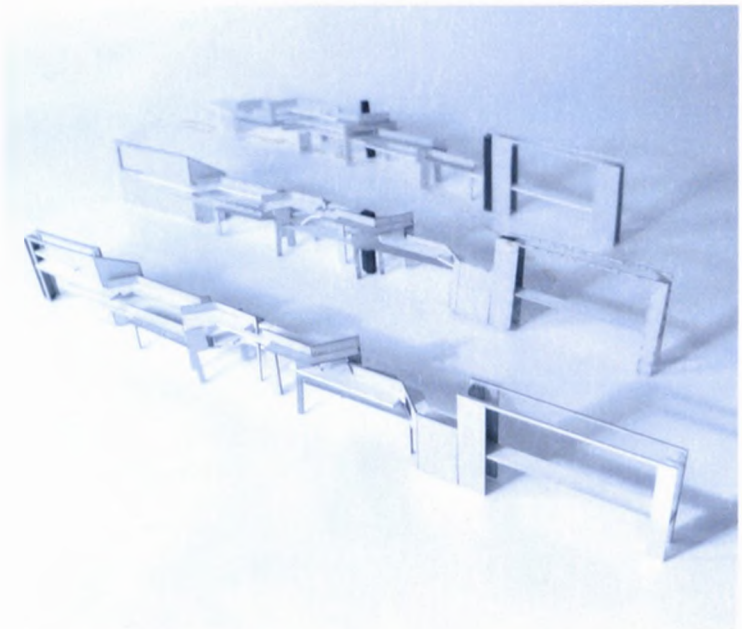
FIG. 31.22

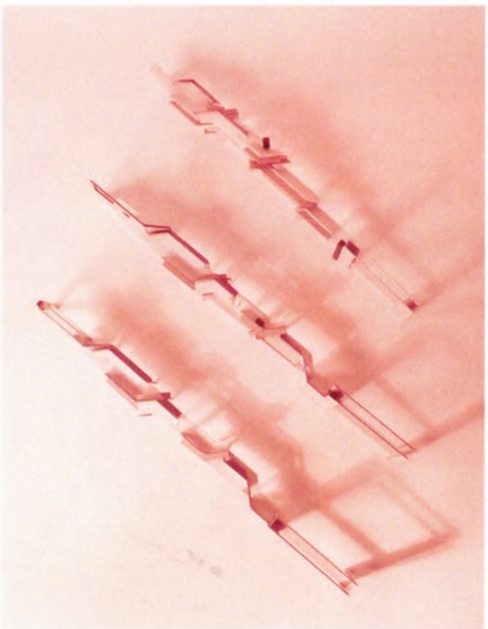
The design process began by imagining New Road as a motorcar-free corridor across Halfway House. This conceptual exercise provided an opportunity to explore spacial possibilities within the pre-established conceptual realm.

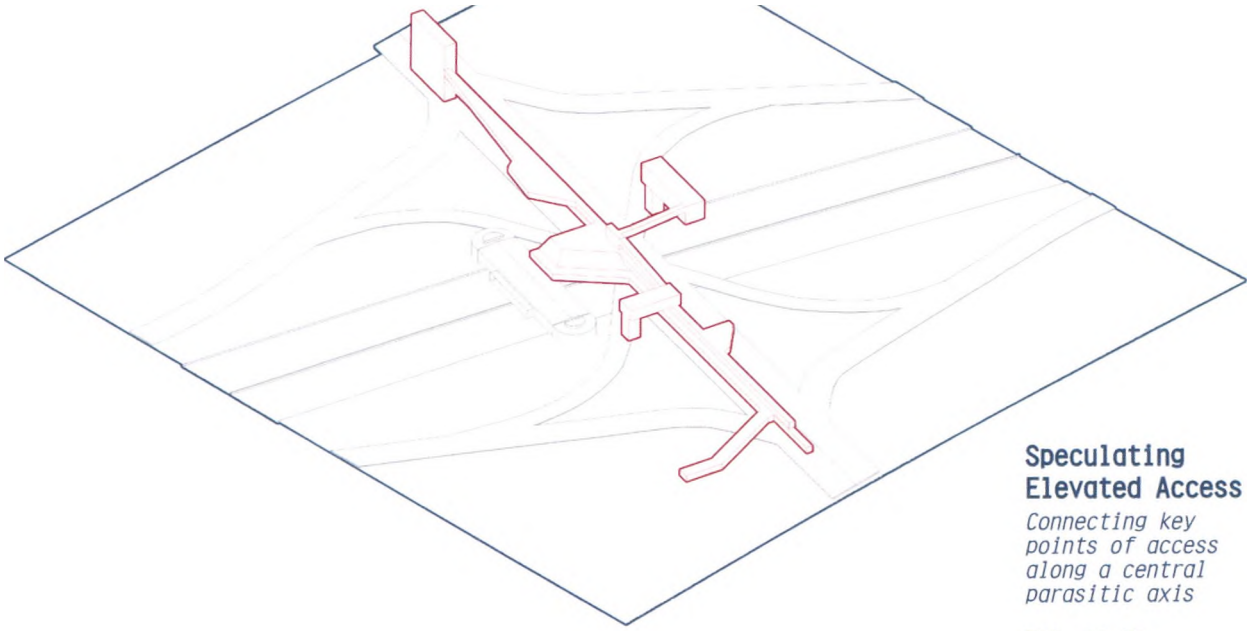
The next step involved elevating the concourse to a separate plane, retaining the bridge's existing condition. However, the New Road structural grid was adopted and adapted while arranging the programme along the primary axis.







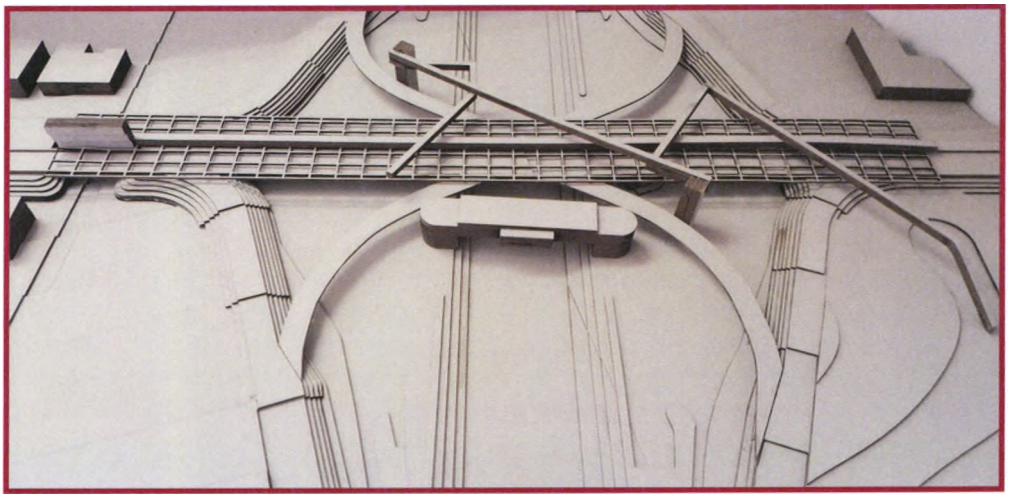




Speculating Elevated Access

Connecting key points of access along a central parasitic axis

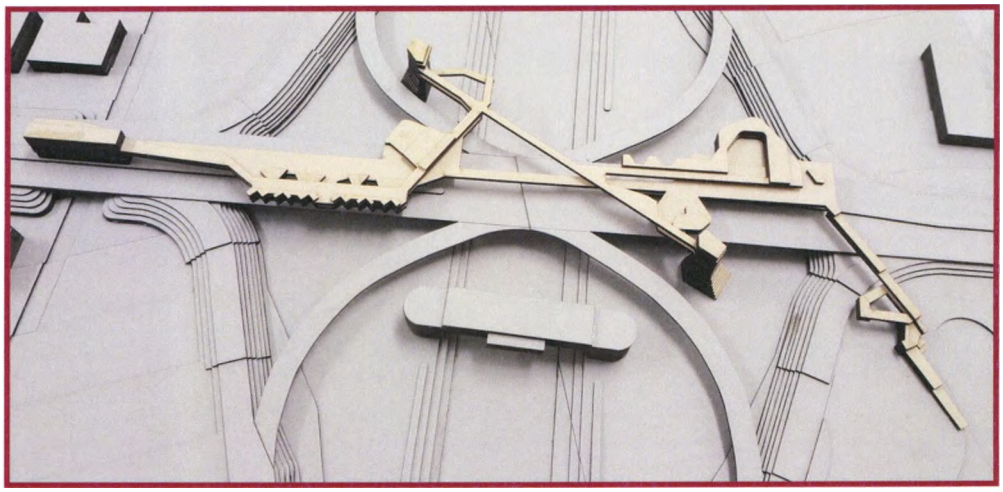
FIG. 3I.23



Adopting Structure

The structural grid of the bridge below is inherited by an initial sketch model which identifies the primary and secondary paths

FIG. 3I.24



Identifying Interventions

Developing the intended architectural form along the concourse

FIG. 3I.25

PRIMARY & SECONDARY PATHS

The concourse is essentially organised along a single linear axis parallel to New Road along in elevation. Furthermore, the programme is formed along several supplementary paths which break off from this central axis according to contextual forces.

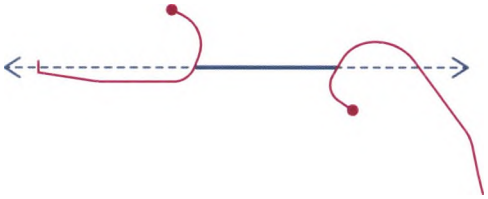


FIG. 3I.26

SHADING MECHANISMS

The site is totally exposed to direct sunlight from the north. In order to protect the pedestrian walkway, the building mass shields the concourse along this horizontal face. This screens out the harsh light and maintains a cool interior climate.

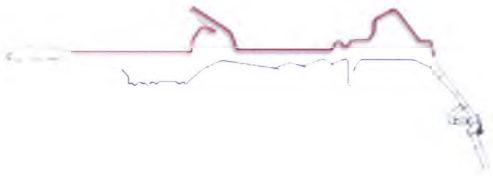


FIG. 3I.27

PROJECT VIABILITY

The design response renders the existing Jozi Diner redundant. In order to get the proposed building passed by the local municipality, the Jozi Diner is planned to be dismantled. Subsequently, the existing air zoning rights afforded to this stand by SANRAL is set to be absorbed by the new pedestrian concourse above New Road. Such rights are a necessary legality when building above infrastructure according to South African law.

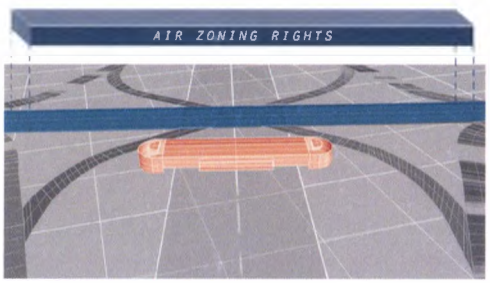


FIG. 3I.28

TRANSLATING THE URBAN GRAIN

As explored in the contextual analysis 'Scaling Halfway House' (pg.86/7), the urban ground comprises a multitude of competing scales. In order to address this, the concourse and its supplementary programme is partitioned into a range of zones which correspond with the stand sizes of the bordering formal and informal residential, retail and industrial sectors.

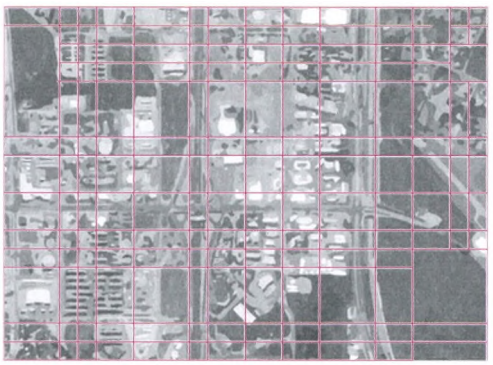


FIG. 3I.29

INTERSECTING PLANES

Structures that support mobility often only allow for a repetitive linear experience. As a response to this, the design incorporates a multitude of intersecting diagonals across a range of planes. This is evident in plan and section, and translates through to the pedestrian and vehicular perspectives.

KINETIC ROOF

The roof takes the form of a light, dynamic, and kinetic form set against the monotonous context of the highway and monolithic overhead bridges. This contrast is made evident by all users, including highway motorists who do not engage directly with the building otherwise.

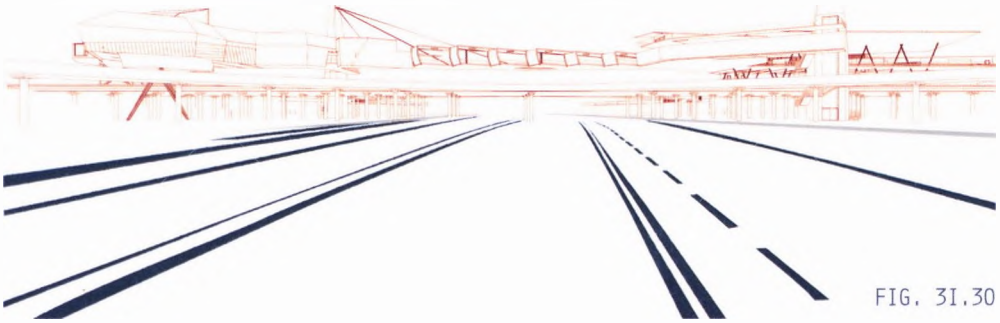


FIG. 3I.30

MINIMAL FOOTPRINT

A primary research subject has been the fuel station. These standardised built forms comprise of a canopy and underground resource with a minimal footprint between the two. The concourse's form responds to this - with the building essentially suspended above the site's existing infrastructure by a couple of vertical elements. These structures in turn support vertical circulation and provide a conduit for services down to the existing fuel station network.

FIG. 3I.31

ENGAGING THE GROUND PLANE

The concourse is simultaneously isolated and indivisible from the infrastructure that supports it. It is the intention of its author not to intervene with the ground plane which currently supports two roadside fuel stations. However, the architecture is sensitively designed to cast shadows on specific spots of pedestrian aggregation, i.e. The section where the fuel attendants currently take their lunch break.

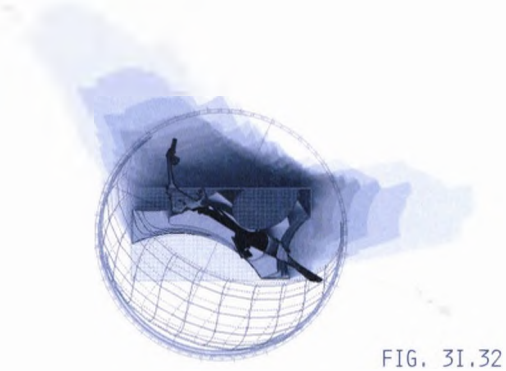


FIG. 3I.32

SITE PLAN

METRES

0 20 40 80 120 160 200

FIG. 31.34

FINAL DRAWINGS

DESIGN PROPOSAL

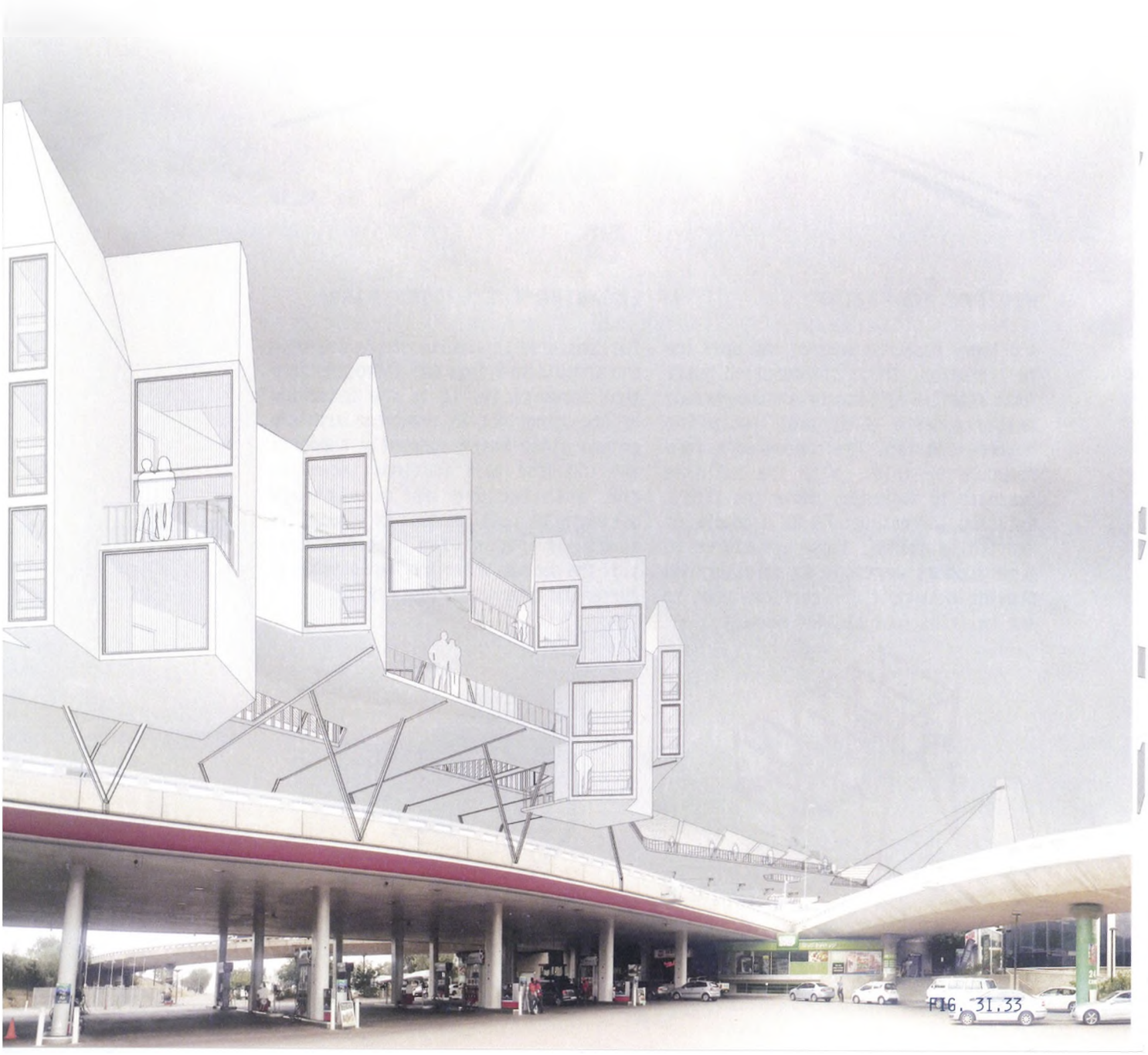


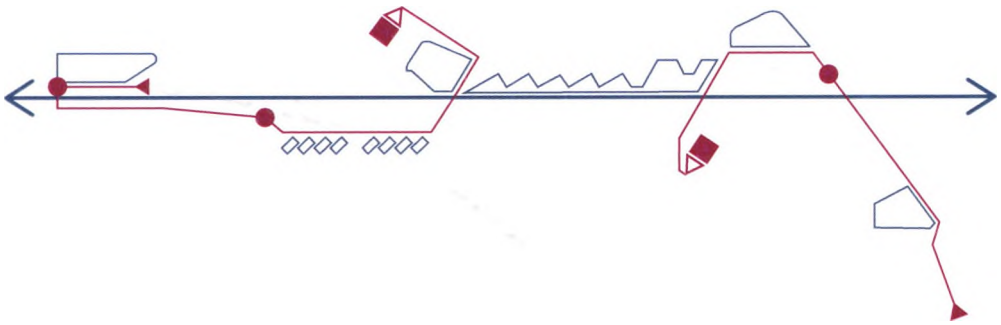
FIG. 31.33

NEW ROAD PLAN

METRES

0 10 20 40 60 80 100

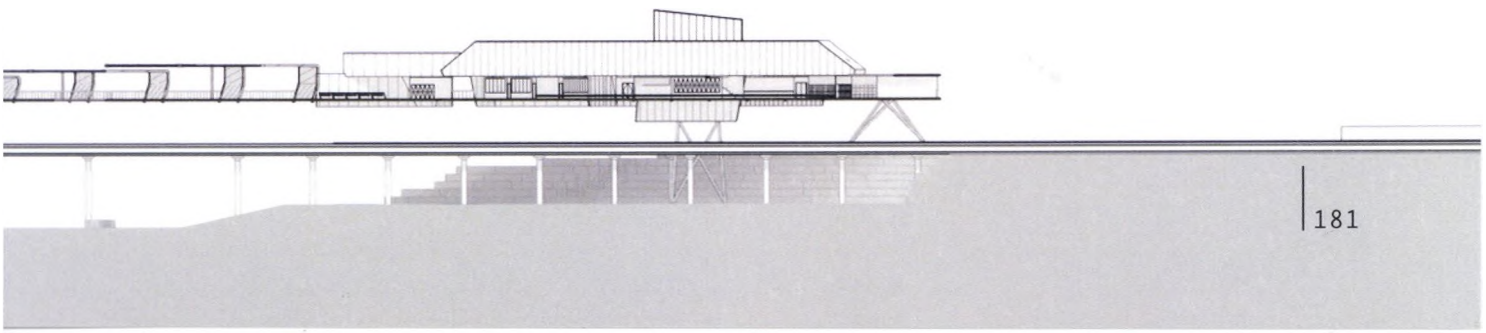
FIG. 3I.36



Services

Ablution and changing facilities are positioned at a minimum of 500m apart. Centralised wet and dry service conduits run down the two observatory towers to the ground plane where they connect to the existing fuel station supply.

FIG. 3I.38



GROUND FLOOR PLAN

METRES

0 10 20 40 60 80 100

FIG. 31.35

Public/Private

The eastern pick-up side is far busier than that of the drop-off terminal. It is for this reason that the more public orientated facilities lie on the east, directly adjacent to the pedestrian link.

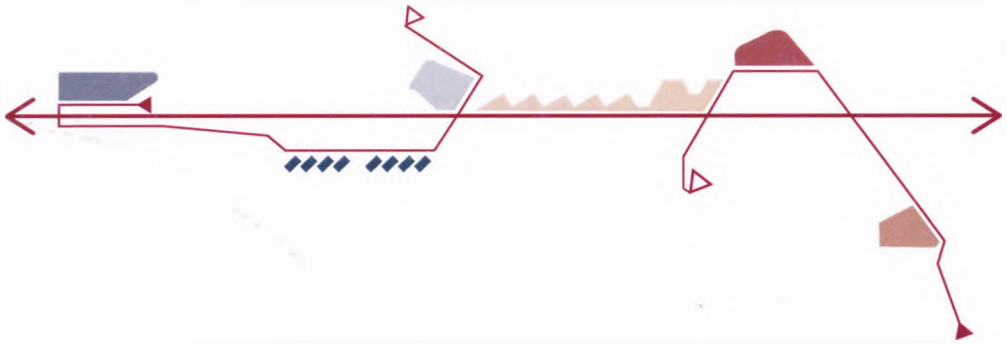
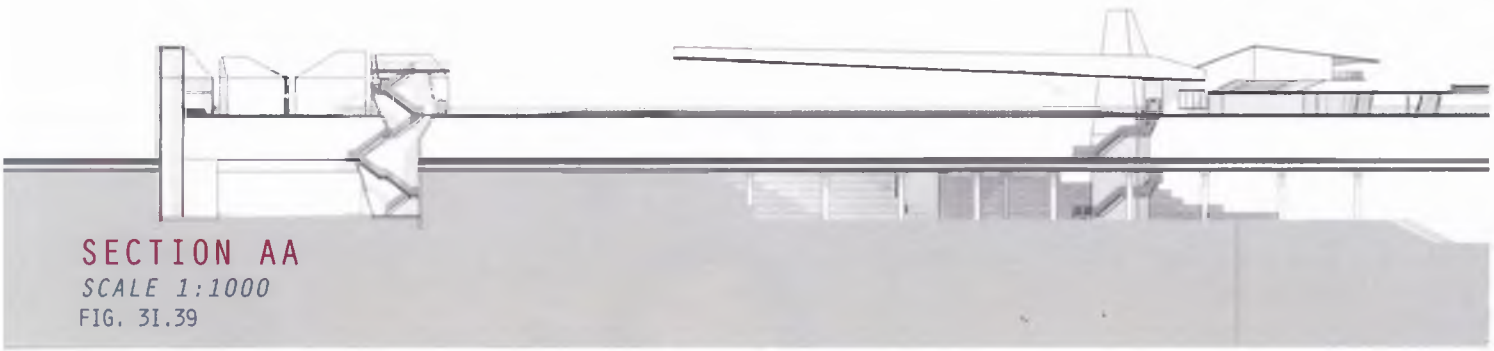


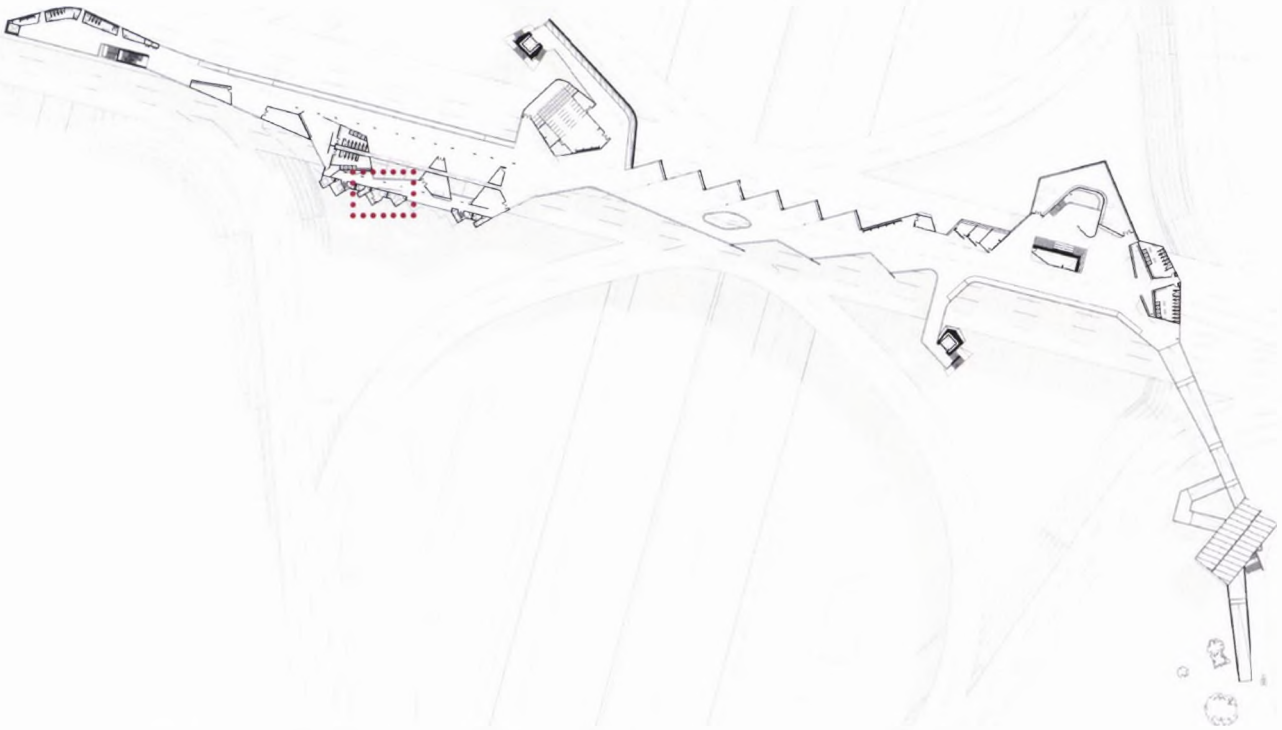
FIG. 31.37



SECTION AA

SCALE 1:1000

FIG. 31.39



CONCOURSE FLOOR PLAN

METRES

0 10 20 40 60 80 100

FIG. 3I.40

Thresholds

In order to keep the design at an architectural, scale the length of the concourse has been broken up into several thresholds. The programme has been independently organized within each segment.

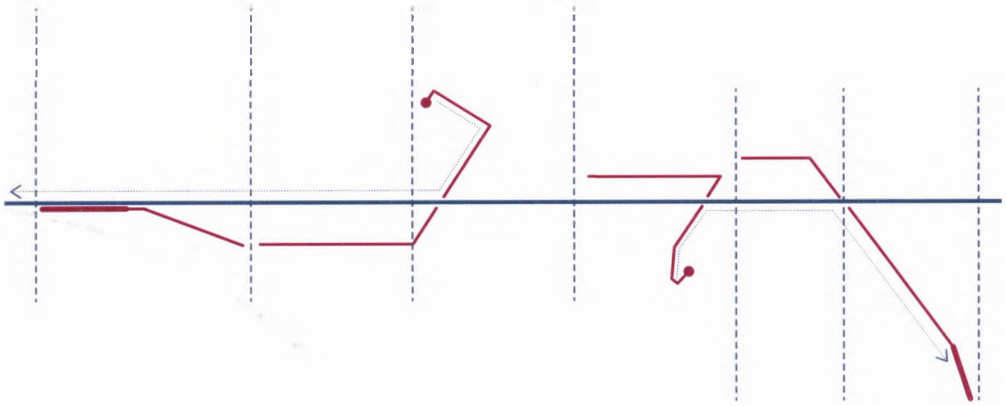
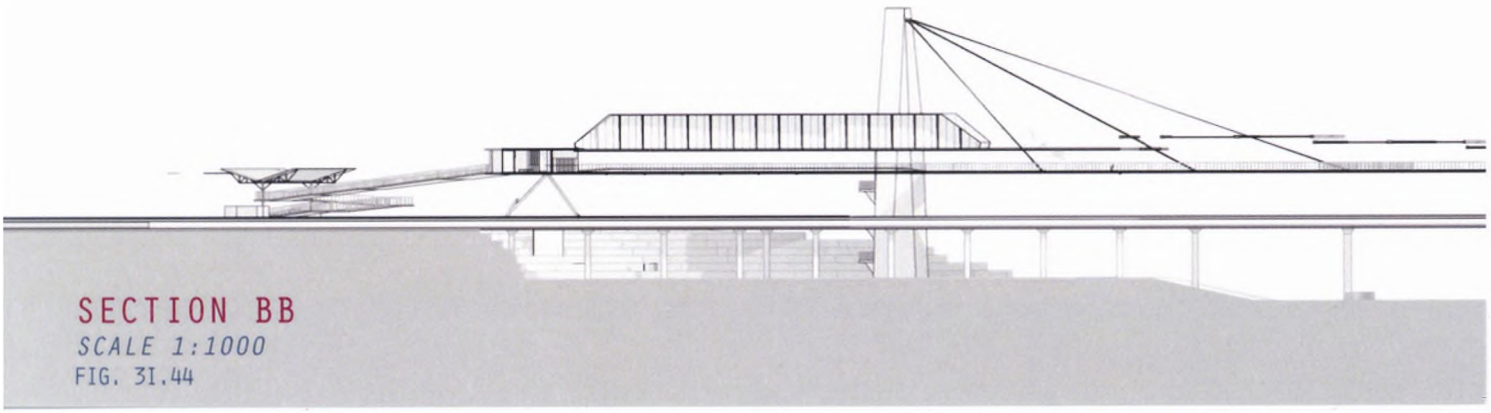


FIG. 3I.42



SECTION BB

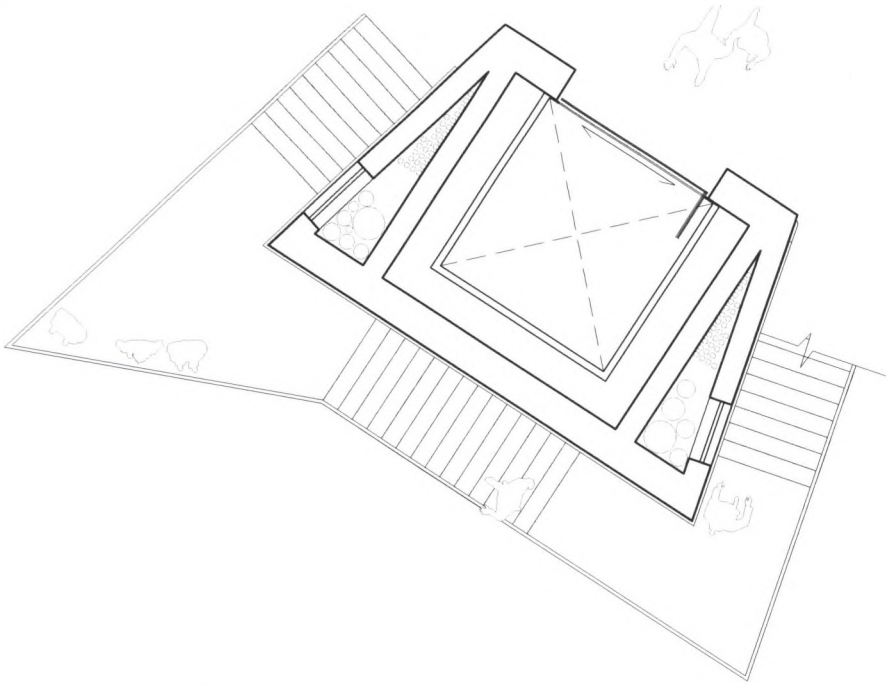
SCALE 1:1000

FIG. 3I.44

Drop-Off Observatory
1:100

This vertical element is the terminal for bus transportation along the N1 north. Fronting Pretoria, the translucent lift allows the pedestrian a dynamic view of the city. This experience is also facilitated by the exaggerated landings and viewing decks of the staircase that wraps around the lift. Service conduits and tension cables are housed on the flanks of the concrete structure

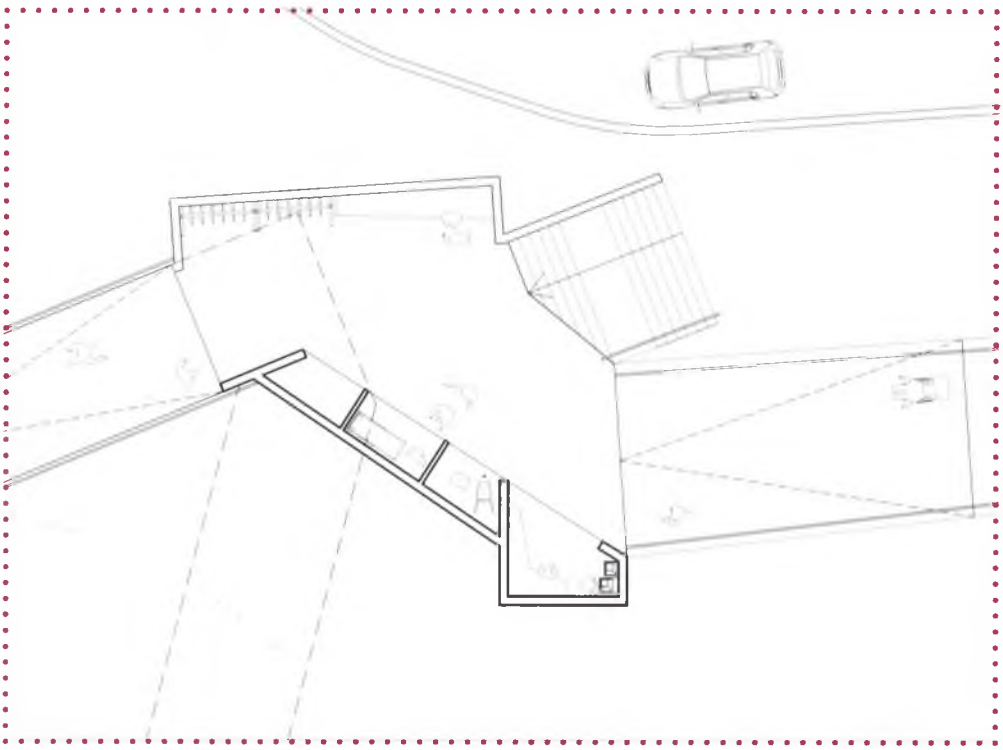
FIG. 3I.45

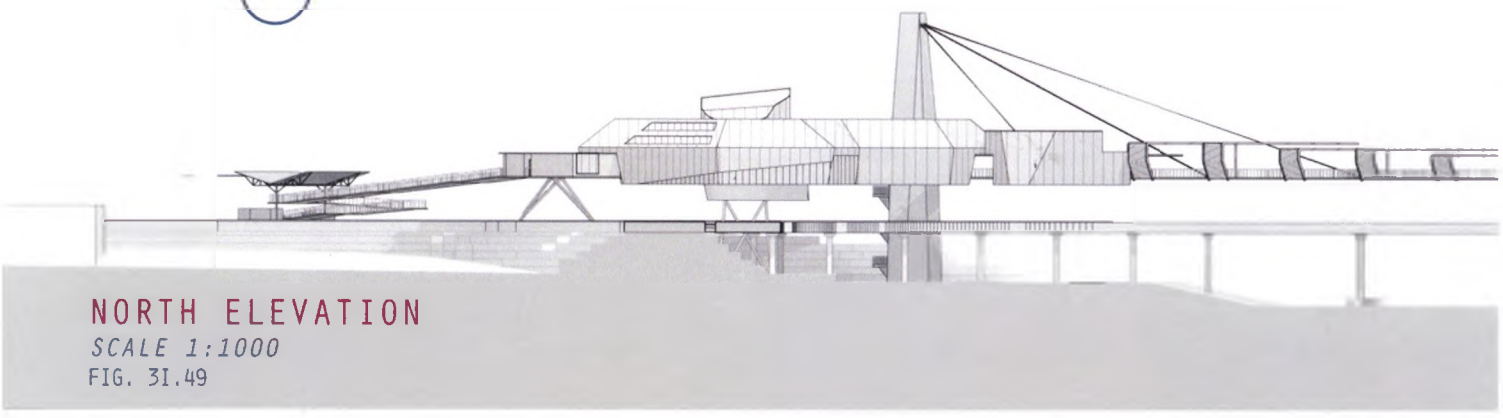


Trade Ramp
1:200

The ramp forms the gateway to the concourse from the east, along a popular existing pedestrian route. It is initially accessible by a staircase and ramp at the Bavaria Avenue cul-de-sac. This corridor of entry supports a mixed-use platform which accommodates a place for trade, bicycle storage, a drinking fountain, and shaded seating as an intermediate point of rest and social gathering.

FIG. 3I.46

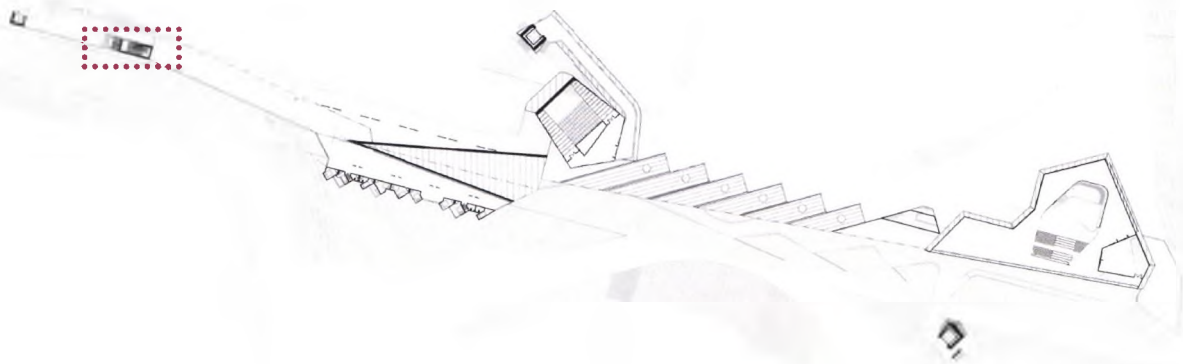




NORTH ELEVATION

SCALE 1:1000

FIG. 3I.49

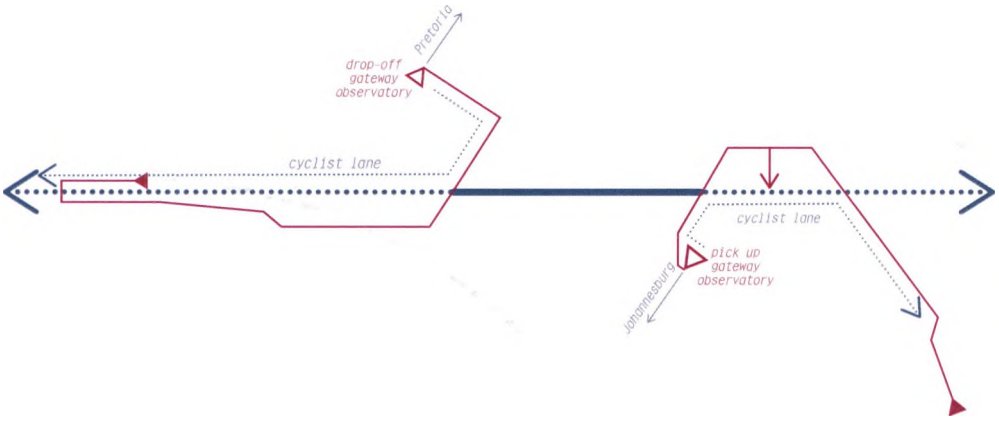


UPPER FLOOR PLAN

METRES

0 10 20 40 60 80 100

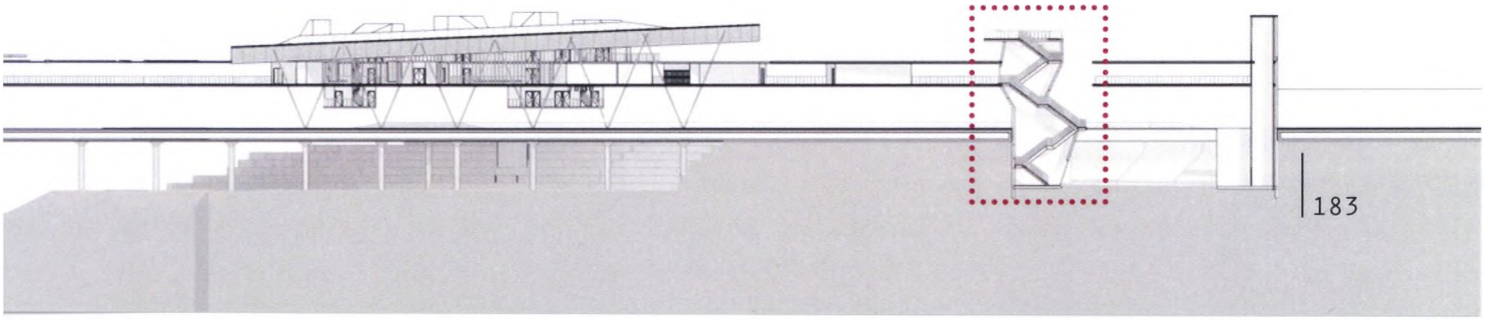
FIG. 3I.41

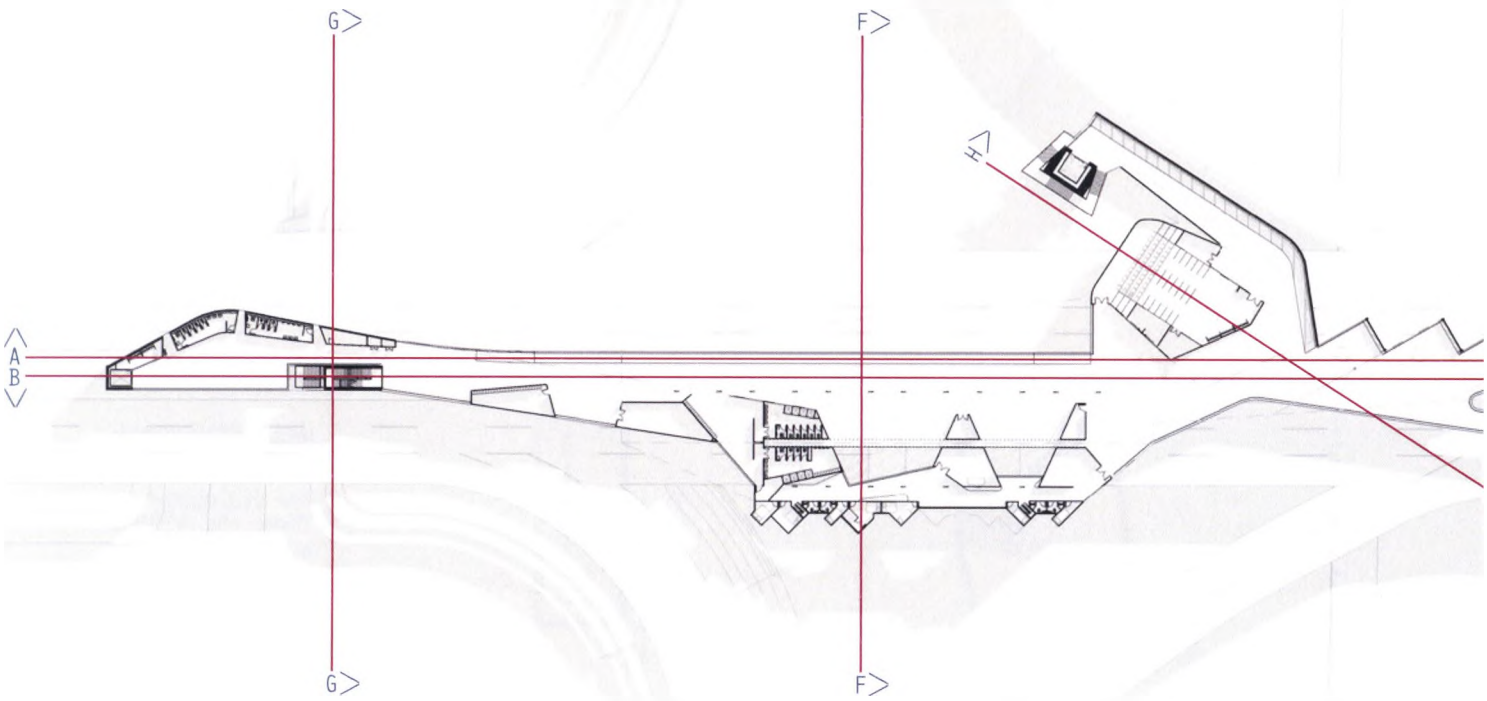


Circulation

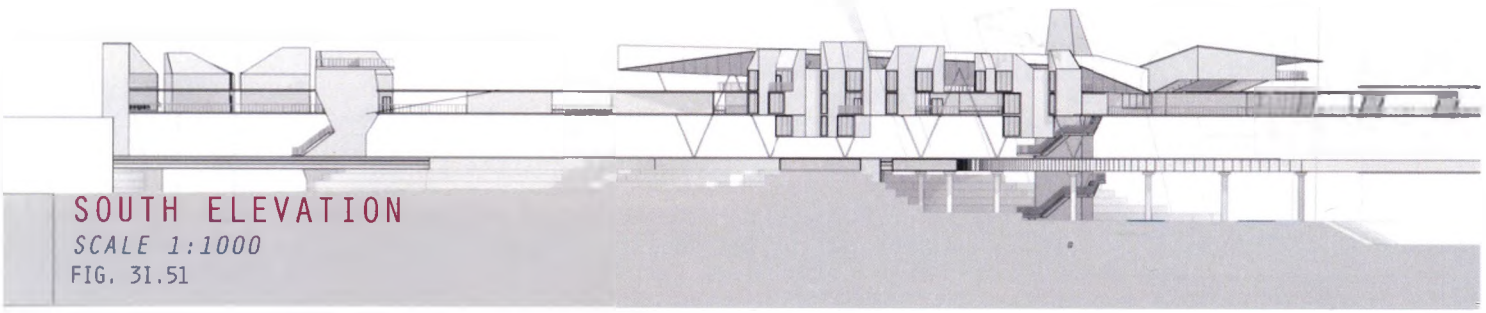
The concourse is made up of a single linear axis with several supplementary paths bisecting the axis. Furthermore, there are four strategically placed grounded points of contact which enable vertical access.

FIG. 3I.43

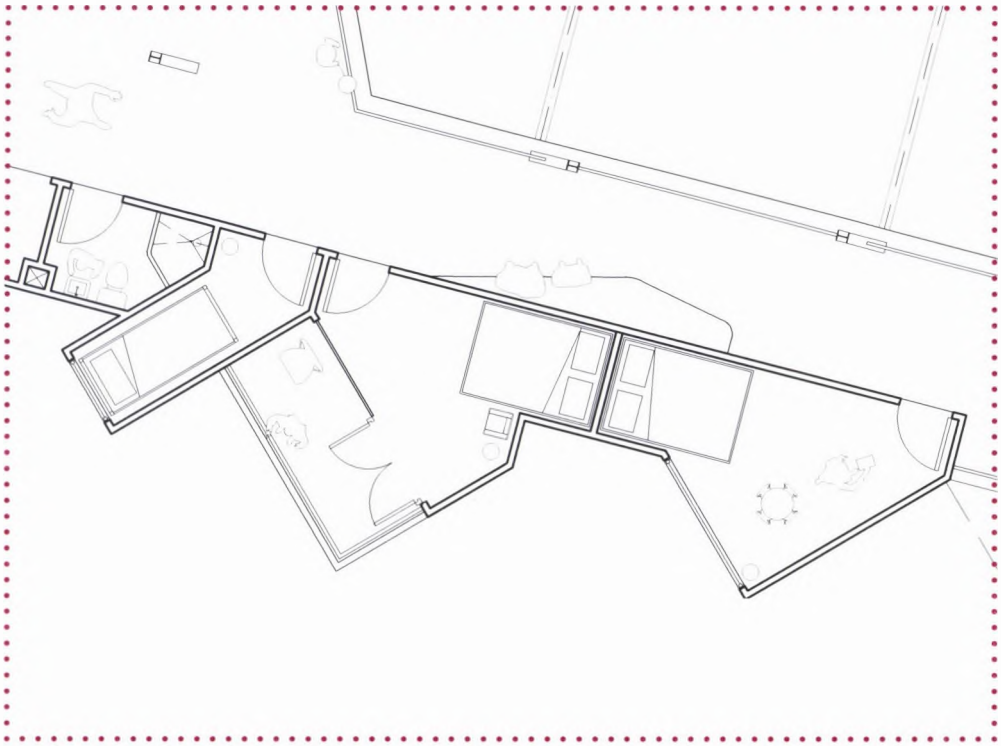




CONCOURSE FLOOR PLAN
SCALE 1:1000
FIG. 3I.50



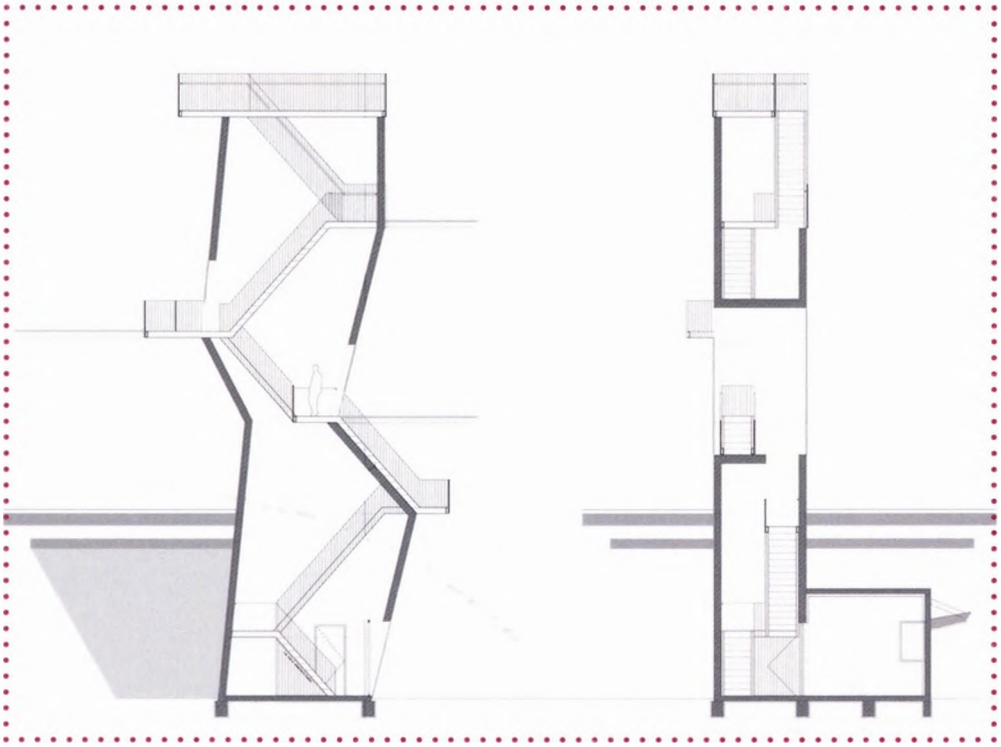
SOUTH ELEVATION
SCALE 1:1000
FIG. 3I.51



Capsule Motel
1:100

This facility for short term accommodation straddles the edge of the New Road bridge. It is located on the end of the site most conducive to privacy. The rooms are directly orientated towards a clear view of the vast Johannesburg skyline. In addition, the south orientation shields the rooms from the harsh morning light for patrons who may have only checked in during the early hours of the morning.

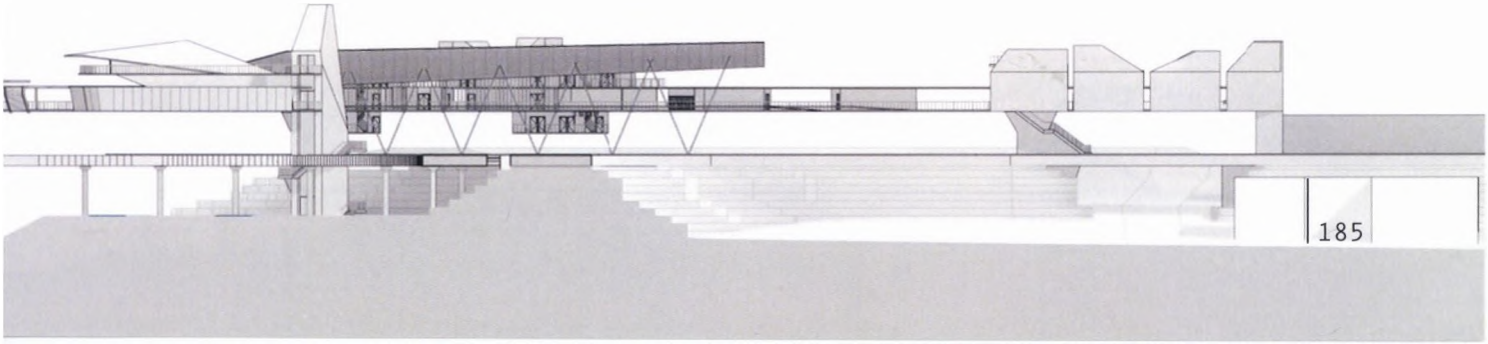
FIG. 3I.47

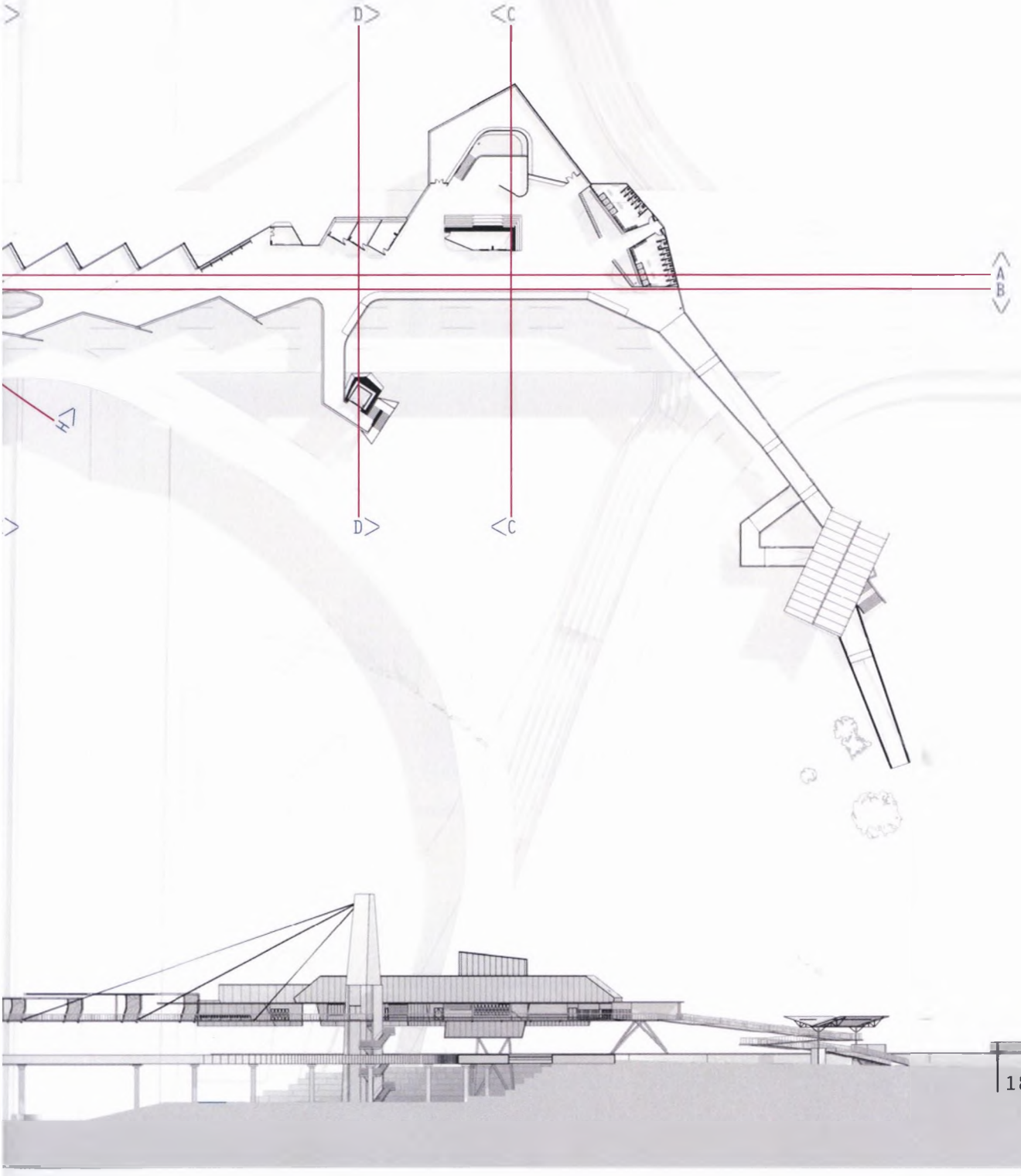


West Staircase
1:200

The staircase forms the primary gateway to the concourse from the west. It breaks through the existing gap in the bridge above 3rd Road. The first storey forms a retaining wall, before meeting the concourse itself. On the next floor are the legal advice offices, and finally it reaches a viewing deck. A concrete shell is formed as it wraps around a steel staircase.

FIG. 3I.48

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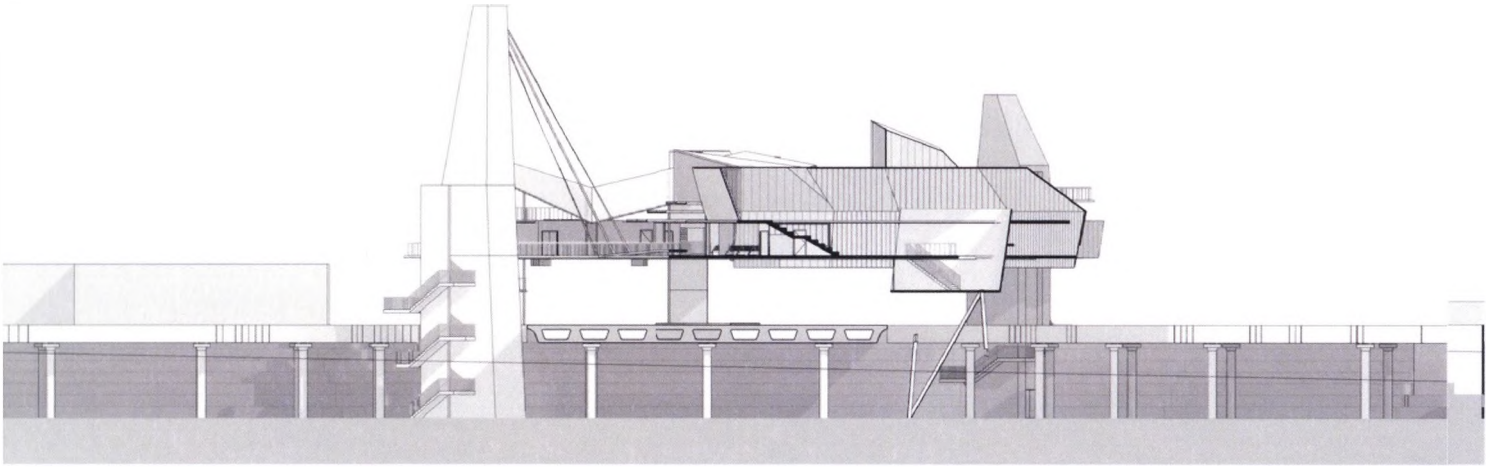

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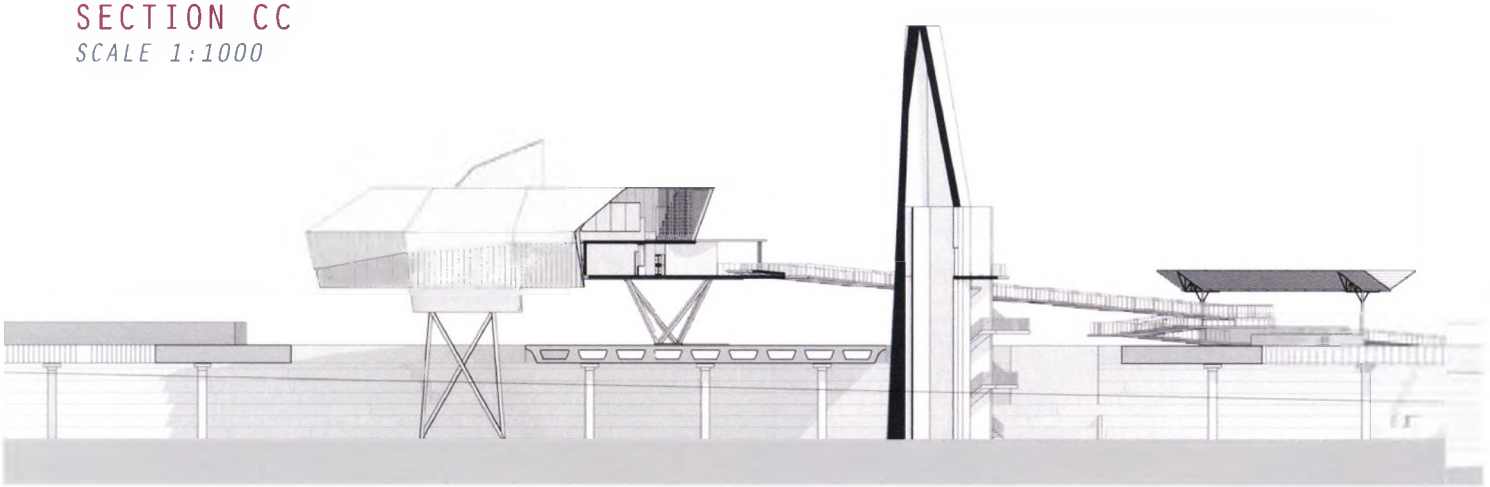

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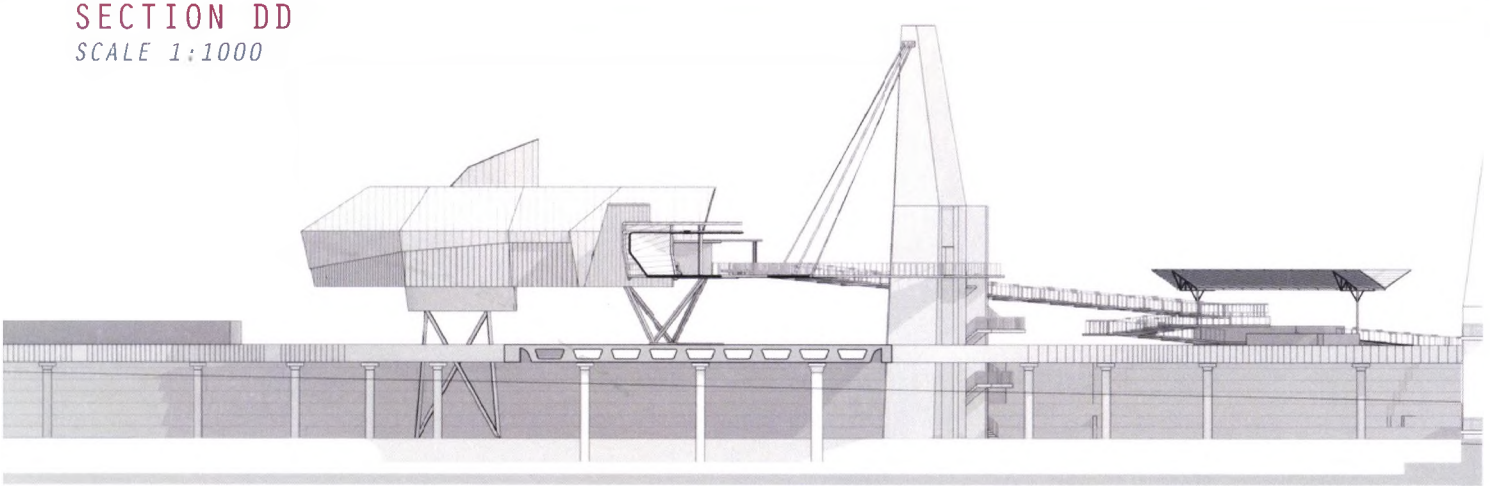
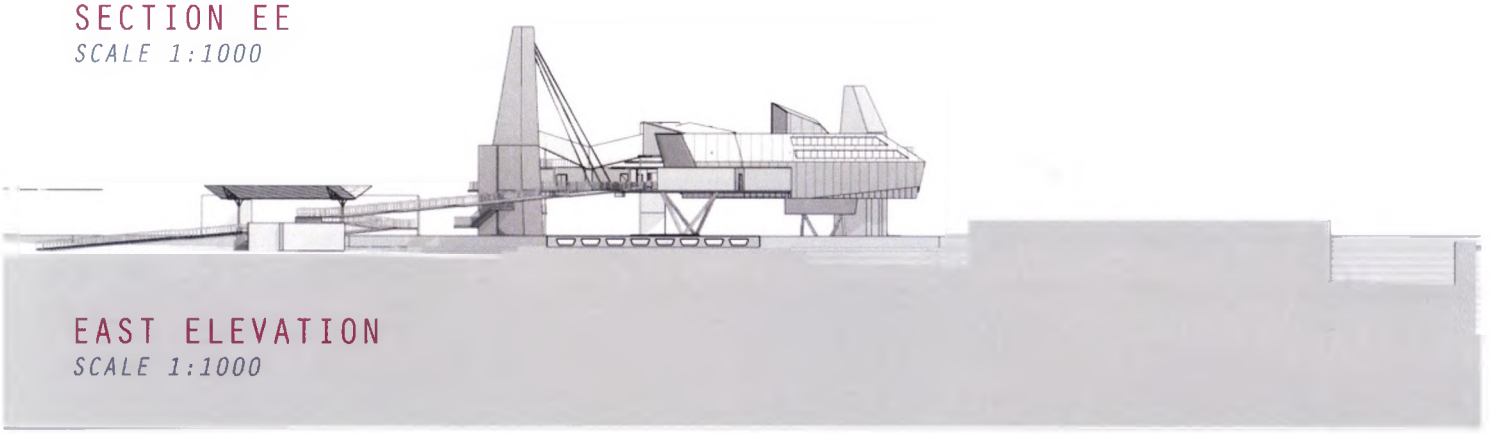
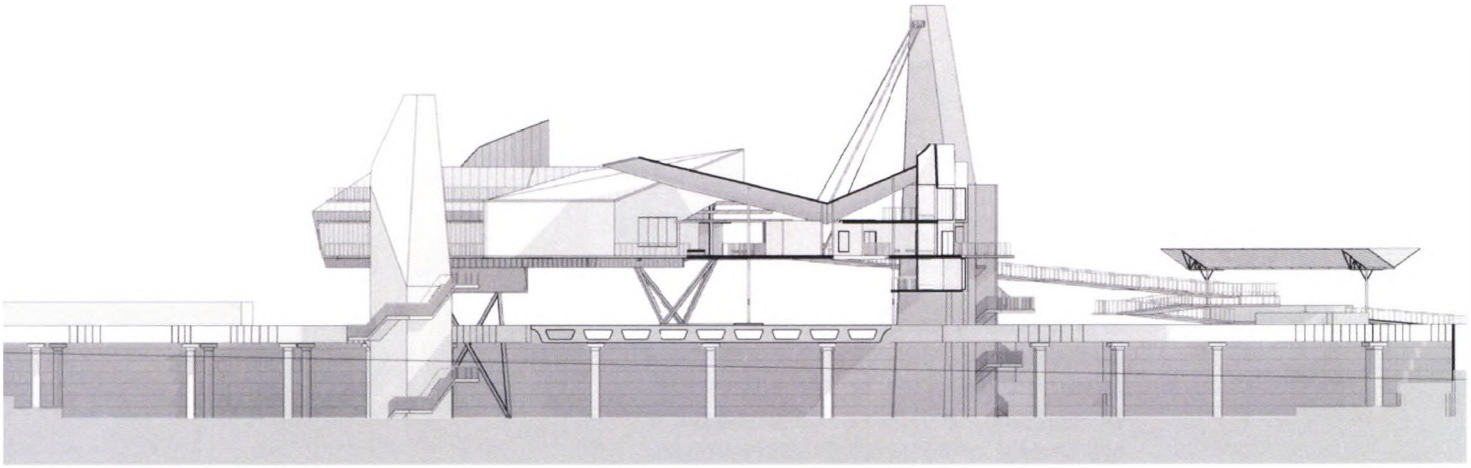


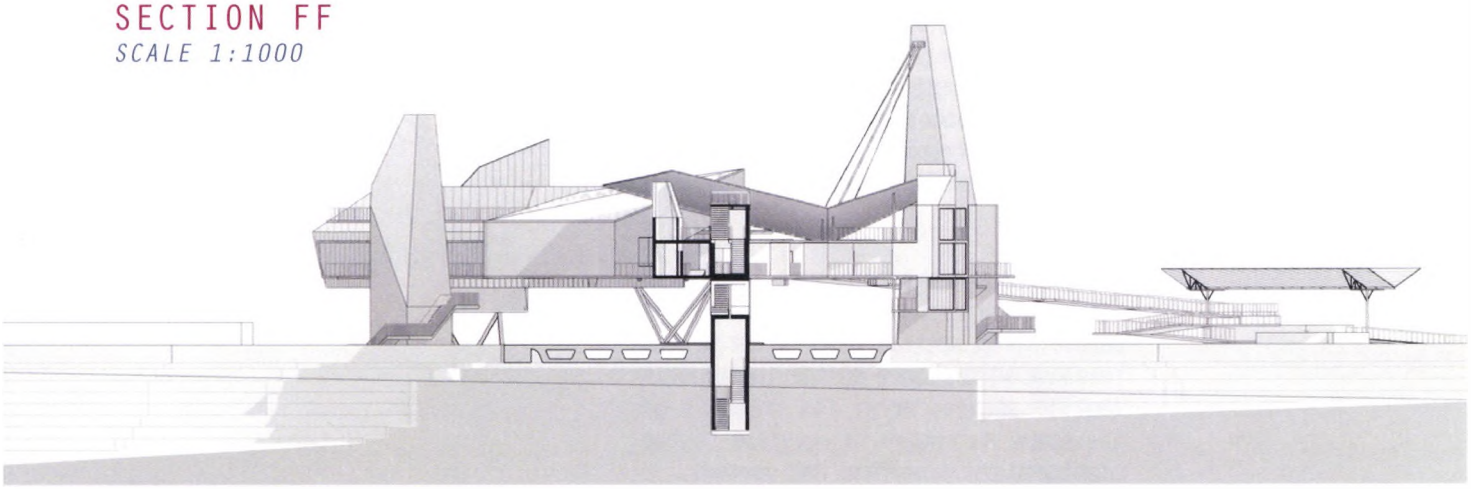
SECTION EE
SCALE 1:1000



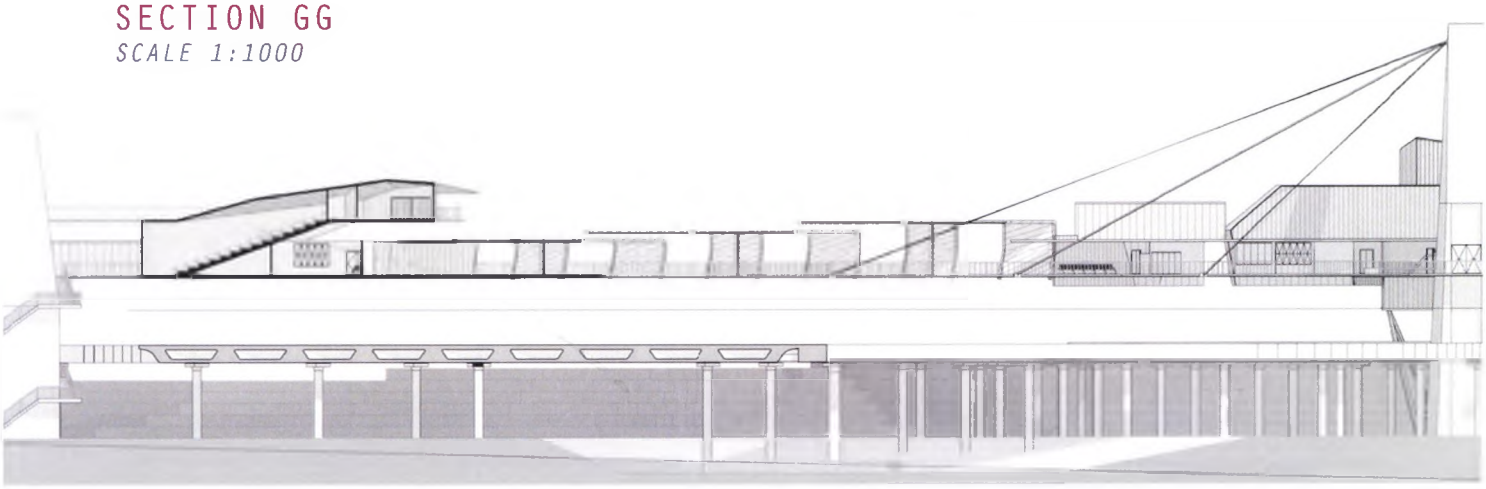
EAST ELEVATION
SCALE 1:1000



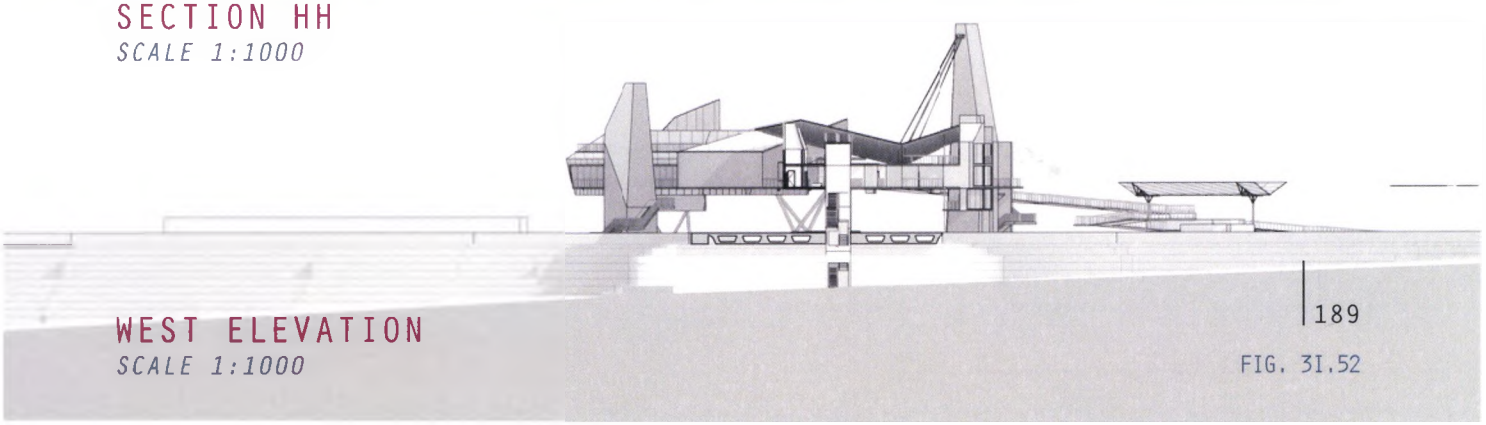
SECTION FF
SCALE 1:1000



SECTION GG
SCALE 1:1000



SECTION HH
SCALE 1:1000



WEST ELEVATION
SCALE 1:1000

FIG. 3I.52

THRESHOLD & NARRATIVE

The design response subsists between architecture and infrastructure. Anchored by the site's current infrastructural configuration, the concourse presents a pedestrian solution at the same scale. In addition, scattered along concourse are several architectural interventions.

From end to end, the pedestrian concourse reaches 350 metres. An architectural scale has been maintained throughout this length by dividing the concourse up into manageable thresholds. The programme is then independently structured within each segment.

The building seeks to bridge the scales between architecture, infrastructure and people. This section reveals the design response with regard to the individuals that it serves. Here, the focus is on the human narrative in relation to the architectural programme and context.

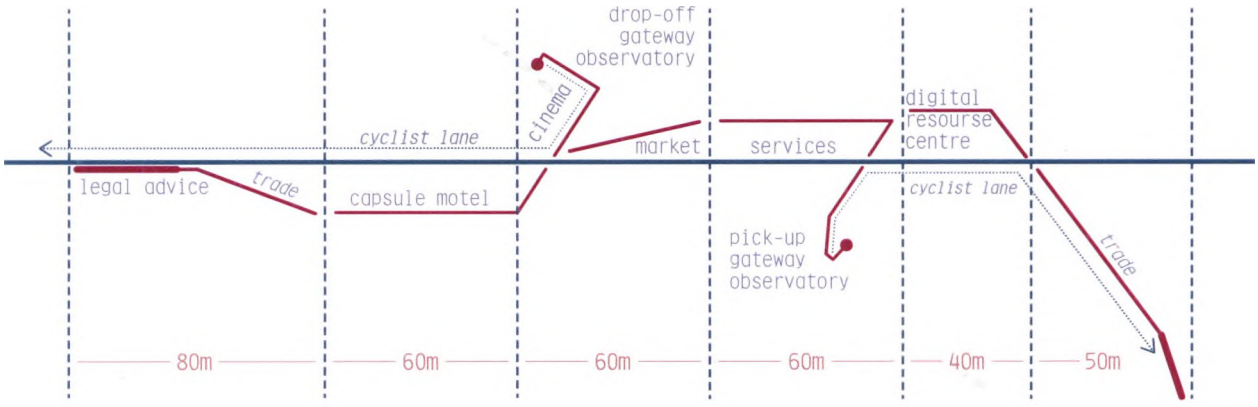
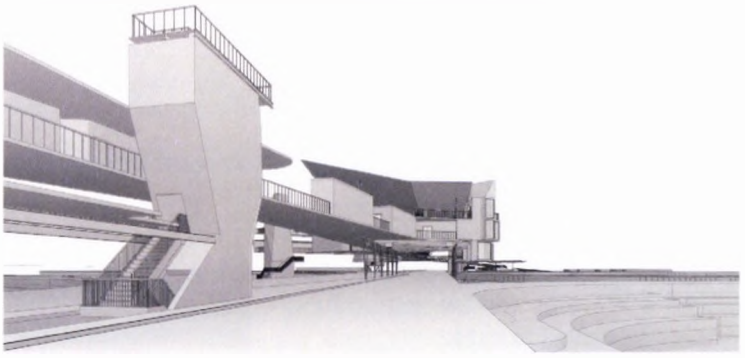


FIG. 3I.53

[1]

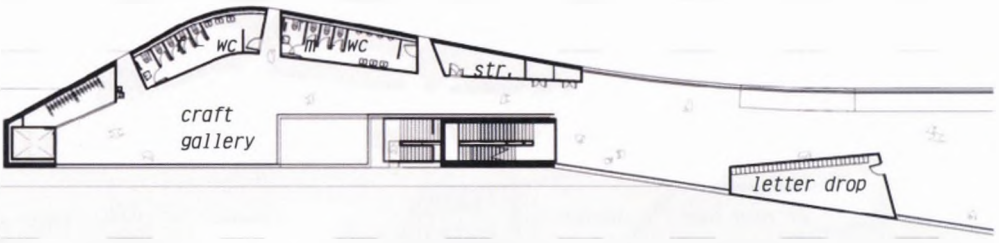
WESTERN ENTRANCE & LEGAL ADVICE OFFICES

The entry point from the west is formed through an existing puncture in the surface of New Road as it bridges over 3rd Road. 3rd Road runs parallel to the highway and serves as a popular route for pedestrians travelling north and south along the areas to the west of Halfway House. A staircase and an elevator are built into the embankment of the intersection, bounded by retaining walls. This structure provides vertical circulation to the concourse before forming legal advice offices on the second floor. These offices serve as a resource to people arriving and departing the country through the terminal, informing them of their legal rights and responsibilities.



Oblique view of concourse visible from the New Road bridge link over 3rd Road

FIG. 3I.54



Foreign National

An entrepreneur arrives from Mozambique unaware of her constitutional rights

FIG. 3I.56

Law Student

A 4th year Wits student volunteers her weekends offering legal advice to those without resources

FIG. 3I.57

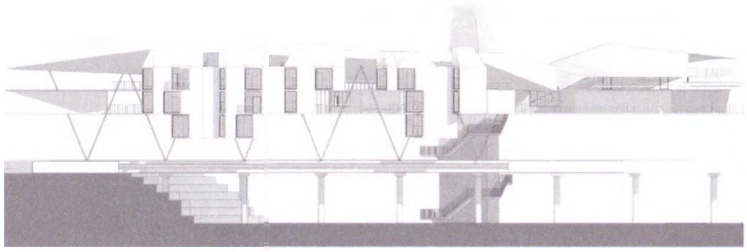
SCALE 1:500

FIG. 3I.55

[2]

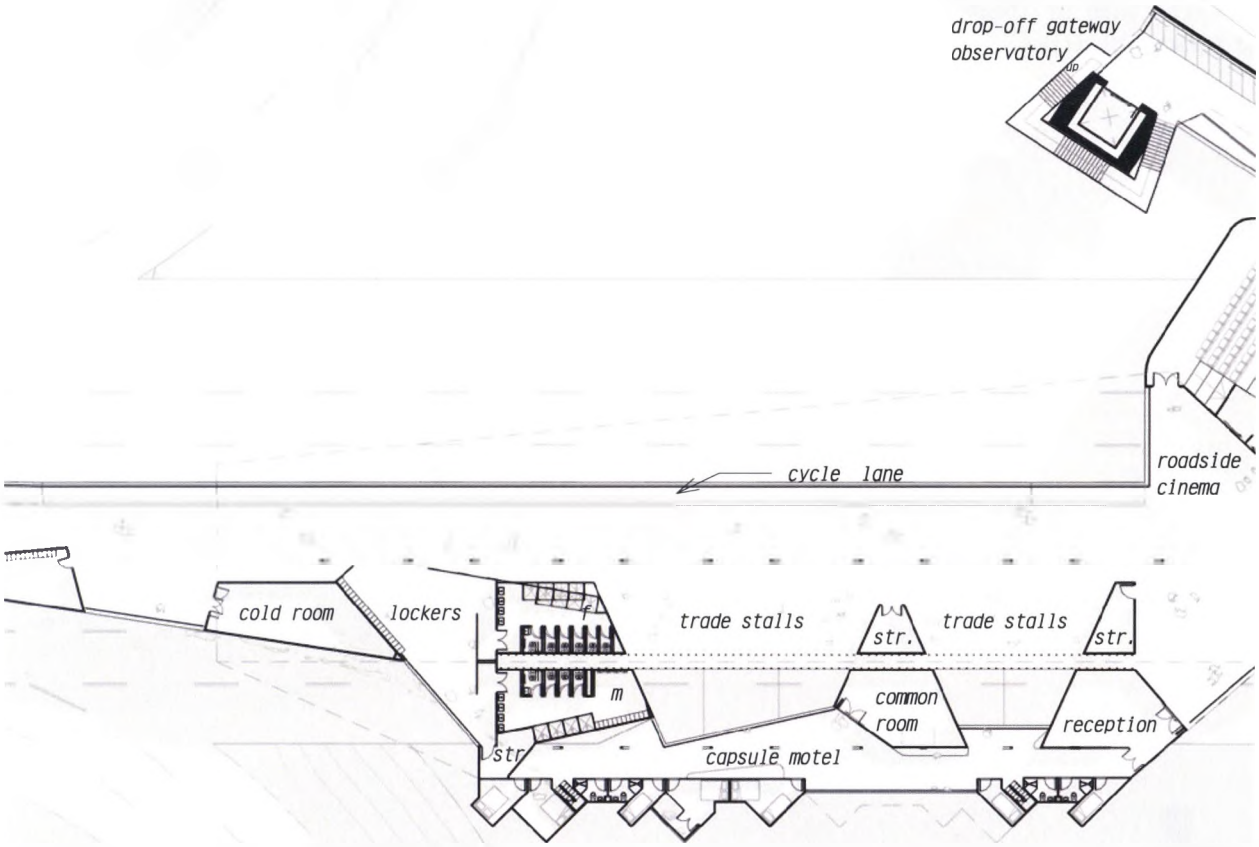
TRADE STATIONS, SERVICE POSTS & SHORT-TERM ACCOMMODATION MOTEL

Constructed above the portion most conducive to privacy, the capsule motel is exposed to minimal sun, noise and visual exposure. There is a range of thresholds between the primary concourse corridor and the motel bedrooms. This includes facilities for the pedestrians, vendors, and motel guests.



Fractional South Elevation

FIG. 3I.58



SCALE 1:500

FIG. 3I.60

Local Butcher

The roadside butcher is accomodated for, making use of a cold room and trading post

FIG. 3I.62

Resting Trucker

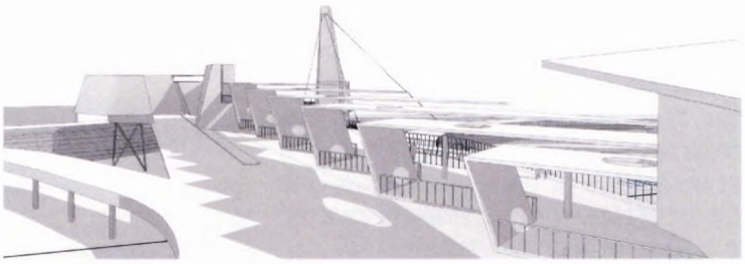
A truck driver pulls over for a 5 hour sleep en route to Maputo from Mossel Bay

FIG. 3I.63

[3]

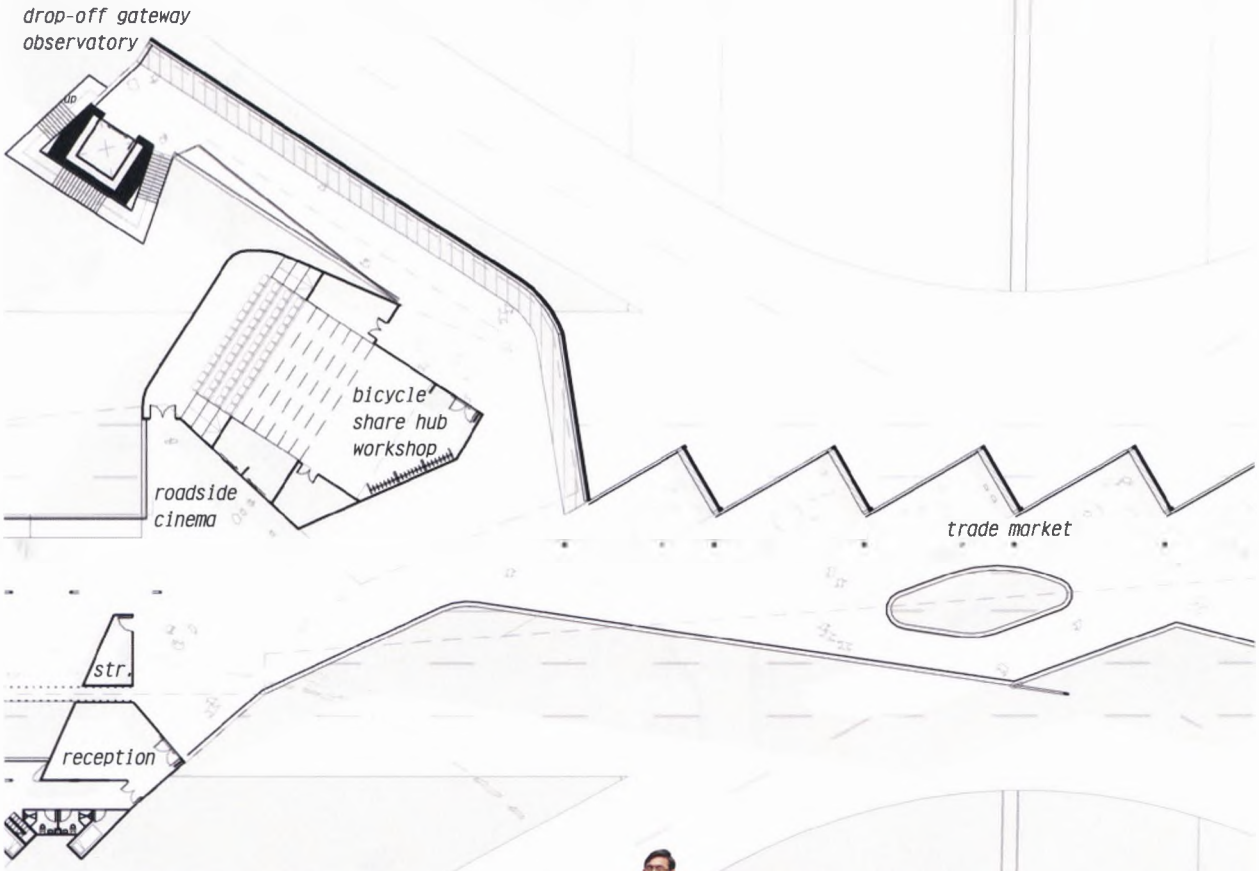
DROP-OFF OBSERVATORY, MARKET & ROADSIDE CINEMA

The western observatory tower provides a direct view towards Pretoria as one rises from the drop-off terminal to the concourse itself. The cable stay bridge link supports a market space. The adjacent movie theatre complex pays homage to the city's historic drive-inn culture, with a reinterpreted pedestrian roadside cinema.



View from second floor of Drop-off Obserservatory down towards the suppended market along the cable stay bridge link

FIG. 3I.59



Moviegoers

A couple enjoy a local film while waiting for their bus to Durban to arrive

FIG. 3I.64

Gautrain Passenger

A local business-man uses the bicycle share hub to connect to a train to Pretoria

FIG. 3I.65

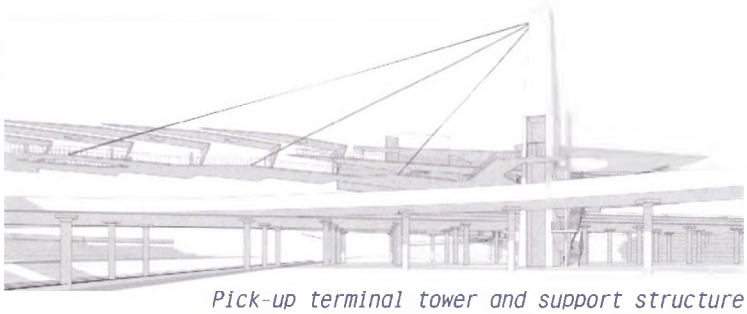
SCALE 1:500

FIG. 3I.61

[4]

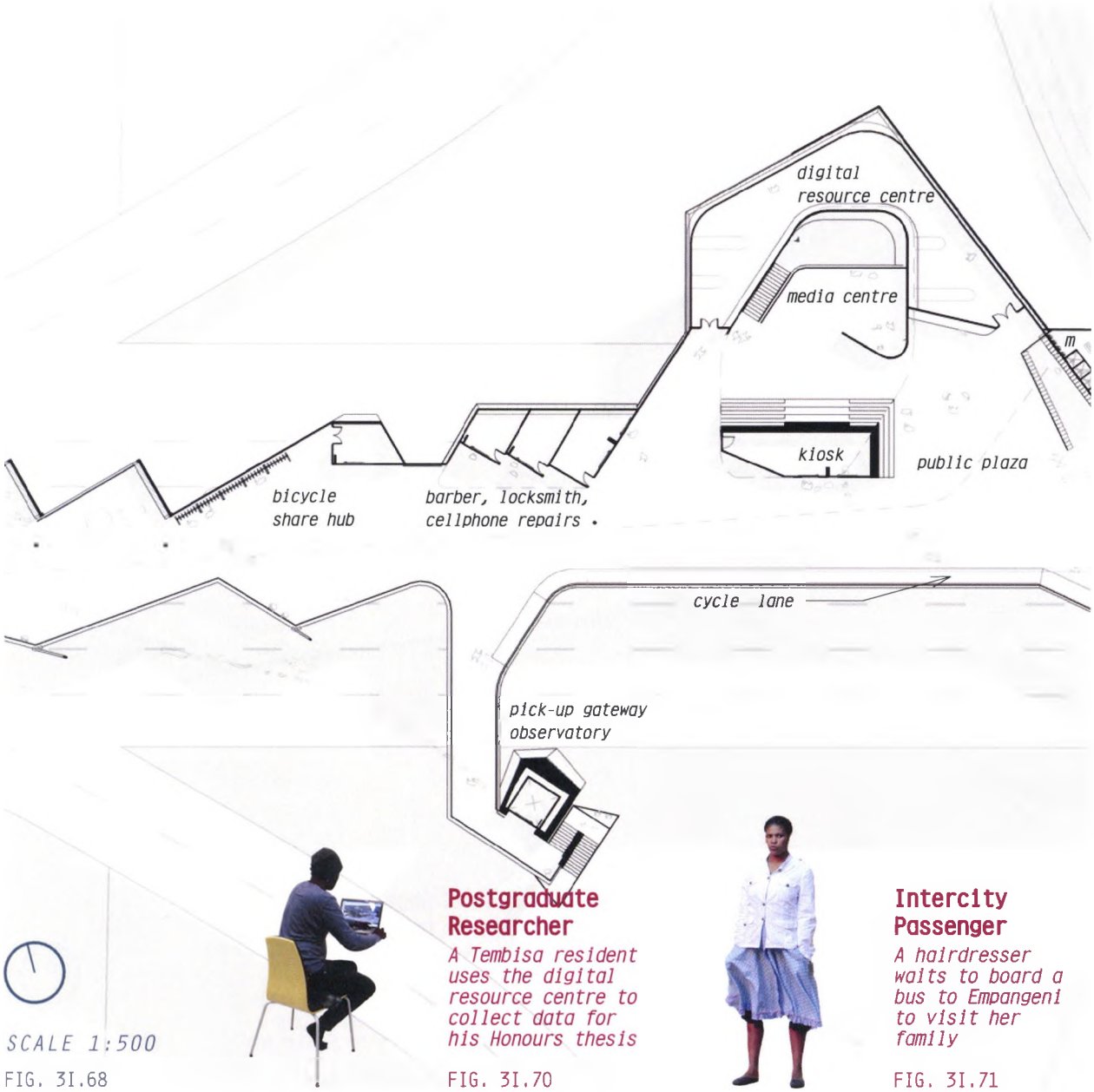
PICK-UP OBSERVATORY, SERVICES, PLAZA & DIGITAL RESOURCE CENTRE

The eastern observatory tower provides a layered panoramic view of Johannesburg's historic and contemporary skylines as one rises from the pick-up terminal to the concourse's platform. This section is the most accessible to the public, supporting a ticket office, digital resource centre, and a bicycle shareway hub.



Pick-up terminal tower and support structure within the existing infrastructural configuration

FIG. 3I.66



SCALE 1:500

FIG. 3I.68

Postgraduate Researcher

A Tembisa resident uses the digital resource centre to collect data for his Honours thesis

FIG. 3I.70

Intercity Passenger

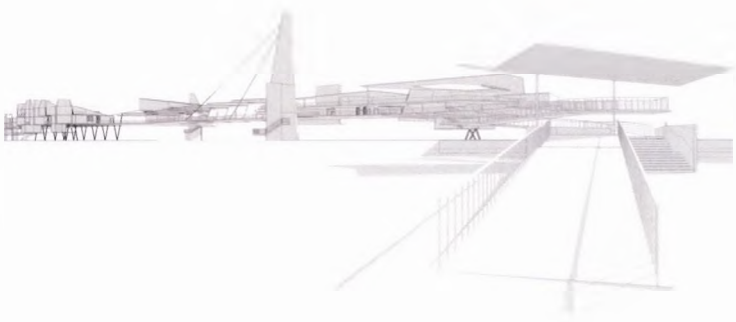
A hairdresser waits to board a bus to Empangeni to visit her family

FIG. 3I.71

[5]

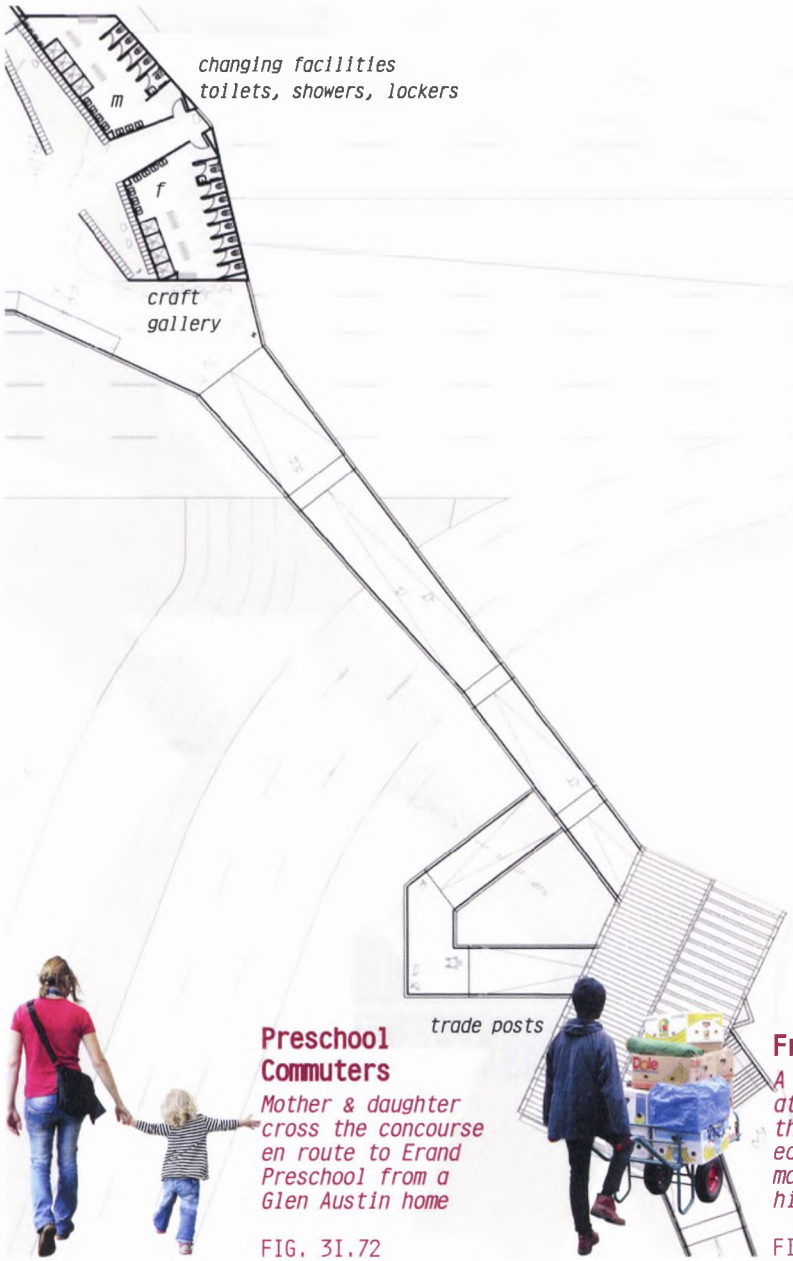
EASTERN ENTRANCE, TRADE & CHANGING FACILITIES

The sole concourse entryway from the east is formed at the point where pedestrians currently begin to decend down the embankment. Instead, the design proposes a ramp where users ascend along trade stalls. This culminates in a gallery space, behind which lockers, toilets, and showering facilities are organised.



Base of ramp from Bavaria Avenue cul-de-sac

FIG. 3I.67



Preschool Commuters

Mother & daughter cross the concourse en route to Erand Preschool from a Glen Austin home

FIG. 3I.72

Fruit Vendor

A trader arrives at the base of the ramp in the early hours of the morning to set up his stand

FIG. 3I.73

SCALE 1:500

FIG. 3I.69

PART J

TECHNICAL DEVELOPMENT

FIG. 3J.01


111
MIDRAND
M71
Crowthorne
11

FIG. 3J.02

PARASITIC CONNECTORS

The design focuses on the adaptive re-use of existing transit infrastructure. The building's structural system is derived from the site's parasitic lighting posts, indicators, and signage. These allow for minimal footprint, as they clamp along to the edge of the bridge and are grounded within the roadway's central island.

A key reality in any intervention across a national arterial is the inability to attain site handover. Due to the necessity to maintain a consistent flow of traffic, it is not possible to clear the site for construction. These conditions call for innovative structural solutions. South Africa is steeped in a history of low-cost manual labour. This has led to a predominate of wet construction practice. However, this is not practical for the context at hand. Instead, rapid on-site assembly must be achieved while working within the site's accessible surfaces.

Min. Footprint
Max. Visibility

Photographs of the parasitic roadway connectors along New Road bridge

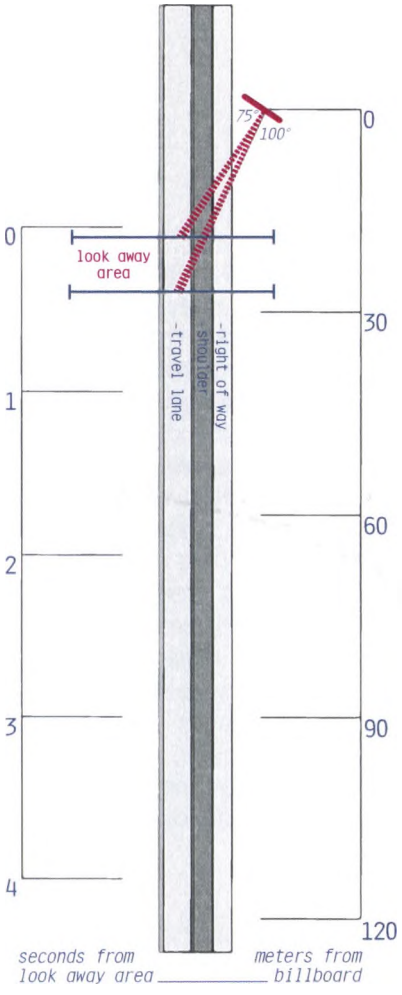
FIG. 3J.03

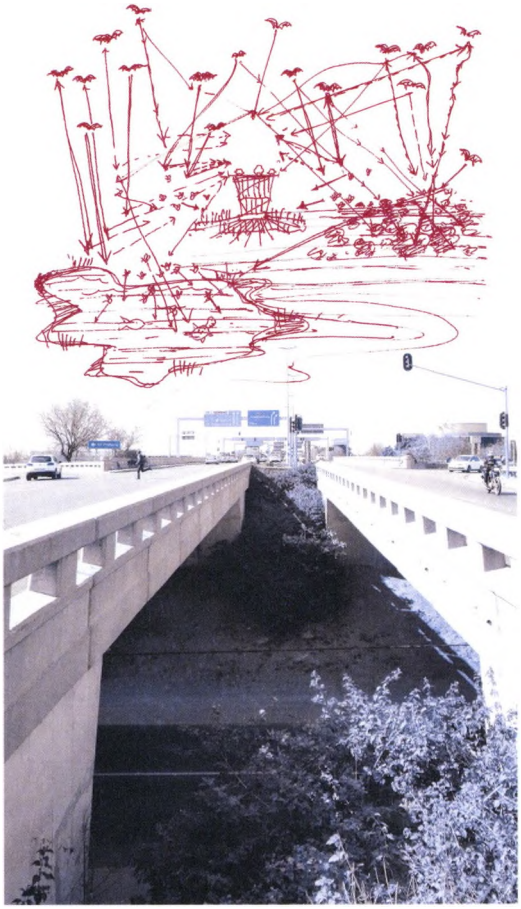
VISUAL COMMUNICATION

The highway is a place of strong visual connectivity. Shortly after the mass rollout of the motor vehicle, businesses have been using this to their advantage through roadside advertising. This form of visual communication has manifested itself globally. A prime example of this is the billboard. This oversized display panel relies on simple mechanics, characteristic of high impact stationery displays. These platforms are ideal for high-speed information exchange.

ACCOMMODATING ECOSYSTEM

Supermodernity has blurred the lines between the artificial and natural landscapes. This is especially evident in way in which the vernacular bat species have taken refuge within the New Road bridge. This is as a result of the ever-expanding urban construct. It is the author's opinion that these circumstances have resulted in a need for humanity to take responsibilty for sensitively incorporating the affected species within the built environment.





3 Second Conversation

Time/Speed/Distance Diagramming the approach to a billboard at 90km/h (left)

FIG. 3J.04

Between Habitat & Highway

Sketching the reformed ecosystem of the local straw-coloured fruit bat (right)

FIG. 3J.05

CASE STUDY: BAT BILLBOARD

Year: 2008
Site: New York City
Architects: Chris Woebken &
Natalie Jeremijenko

This interactive billboard facilitates interactions between bats and humans. The habitat uses the structure of a billboard and provides luxury housing for bats, addressing the environmental health emergency faced with New York bats known as White Nose Syndrome.

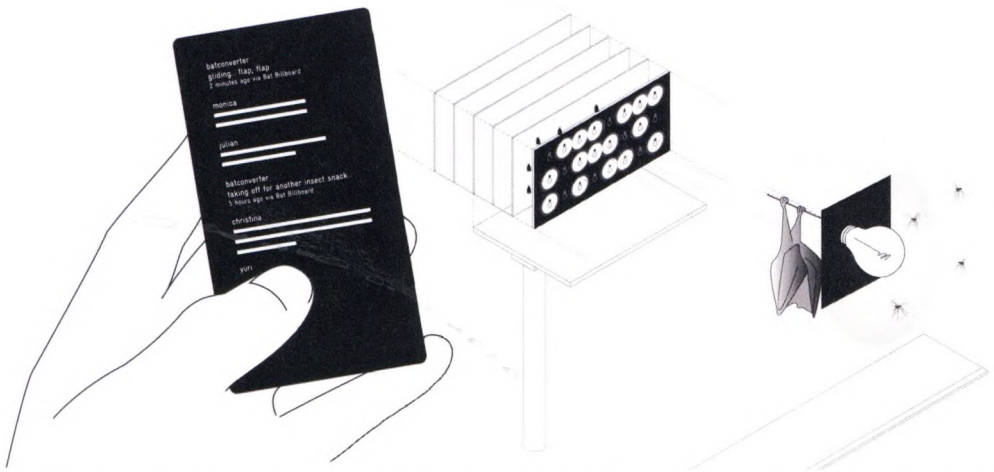
WHY BILLBOARDS?

1) Underutilized structure
2) Opportunity for visibility
3) Create a new form of advertising
4) Easily adapted with habitat housing
5) Interfaces for understanding
   i.e. Tweeting

MIMICKING HABITAT

Bats and birds with their 'seed rain' rival humans in their imprint on the terrestrial ecosystems. Bats manage mosquito populations more cost-effectively (up to 20 000 mosquitoes can be devoured by a single bat and turned into potent fertilizer) and without having to use uncontainable poisons. They are the insect control super-force. Bats can be attracted through providing a habitat with dampened temperature cycles such as found in caves, restricted openings and cling-able surfaces. Their proximity to water can add waterborne insects to a healthy varied diet. The moth attraction of the ubiquitous street-lighting in an urban context provides the equivalent to fast-food fly-thru outlets for the bats.

Bats navigate with echolocation to precisely locate insects in the dark. These ultrasonic bat calls can be made audible to the human hearing range with bat-detectors. Biologists are building libraries to map bat chatter, in order to be able to decipher their social conversations. Through voice recognition software, the billboard becomes an interactive display and a public face for the bats, enabling them to communicate with us about their needs in the urban environment. This communication can be playful and has the potential to create a previously unseen form of viral advertising, as well as an ongoing attention to fostering, studying, and maintaining the bat population therein.



Visual & Technical Translation

The billboard would display the playful and informative 'human interpreted' message on screen- translating their habits and activities so that humans can easily understand them

FIG. 3J.06

AIDING AN URBAN BAT EPIDEMIC

White nose syndrome is an emerging disease affecting urban North American bats, and responsible for 5.7 million bat deaths over the last 20 years. The architects conducted research in the new and promising strategy of holding the temperature above that which the white nose fungus can survive. This resulted in design developments for a modular temperature controlled system to create thermally stable refuge.

CHEAP, FEASIBLE, RELIABLE

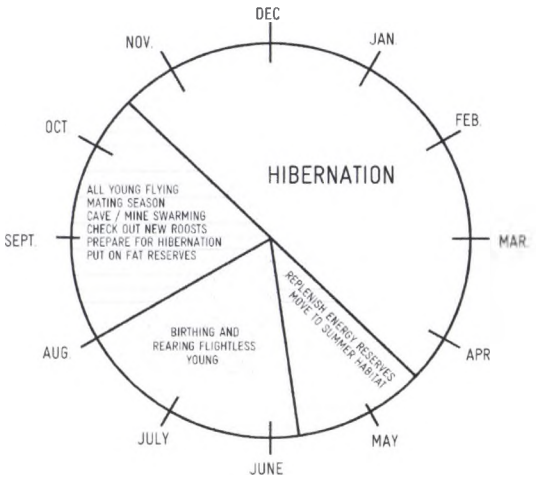
This artificial habitat has been built out of a cost-effective insulating foam lined with with soil propagation mats. This is used to adjust and understand preferences of bats towards temperature controlled habitat in conditions where the fungus is unlikely to grow.

1) Insect supporting plantings
2) Soil as insulation
3) Soil propagation mat
4) Insulation material

Bat Behavior

The misconception about bats is that they are threats and pests, when they actually provide insect control, pollinate plants, and play an important role in the ecosystem

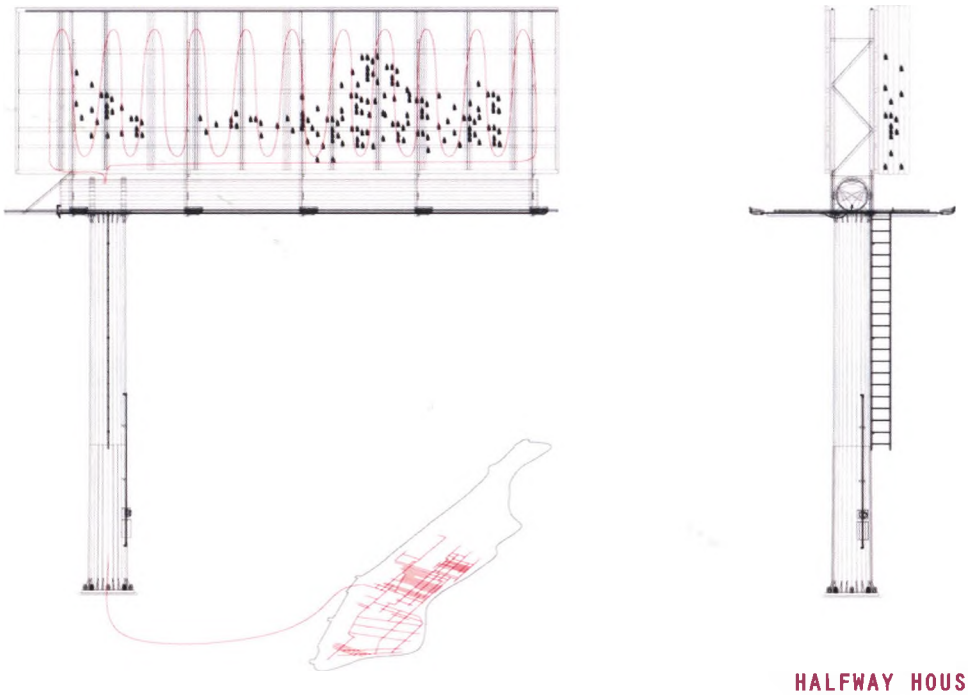
FIG. 3J.07

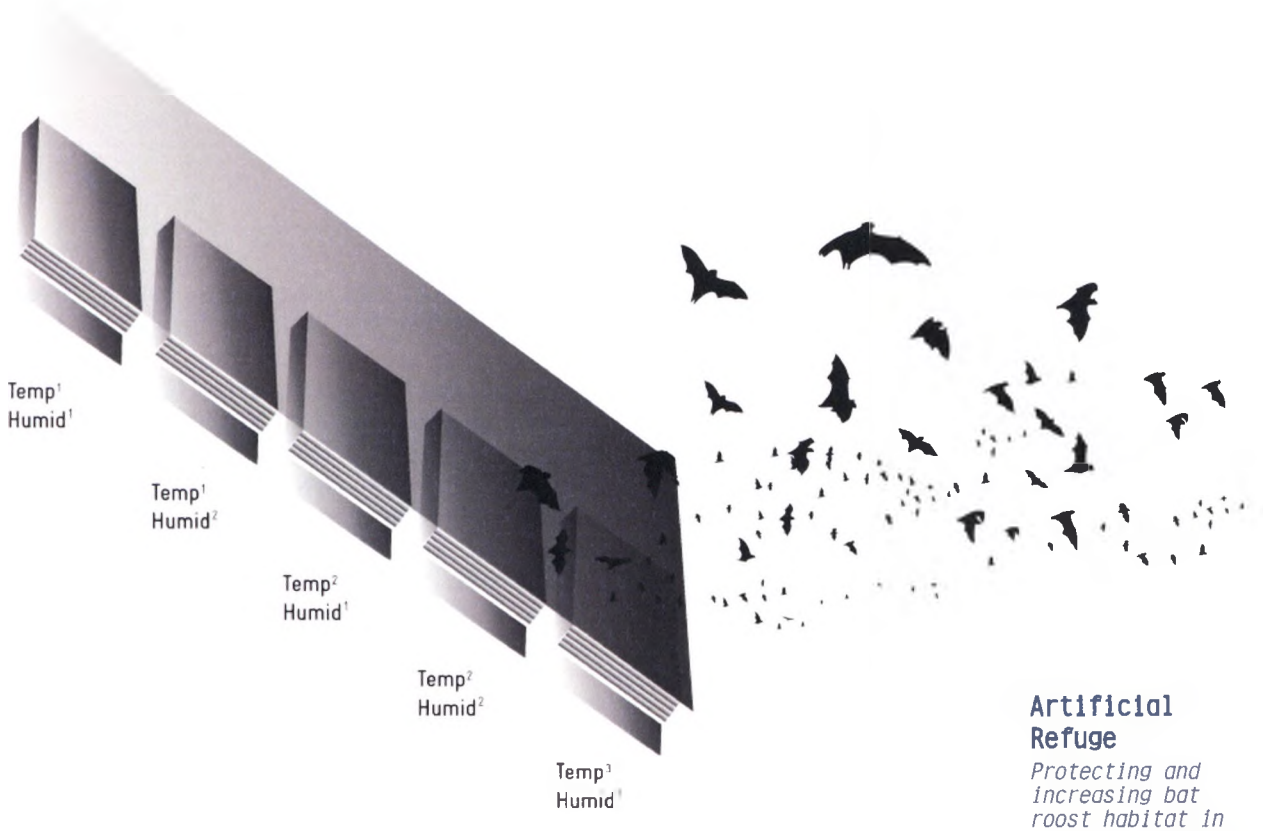


Retrofitting Existing Technology

Using sound processing technology to convert calls which sound like beautiful patterns of clicks that are very similar to electronic music

FIG. 3J.08

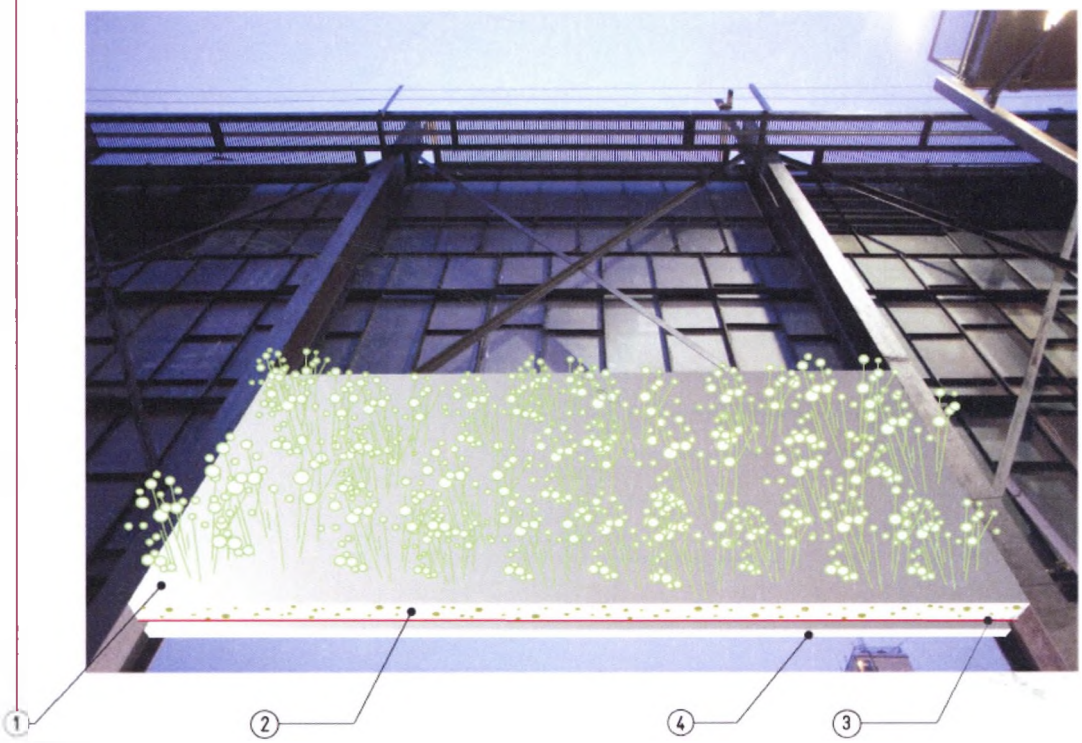




Artificial Refuge

Protecting and increasing bat roost habitat in urban environments through thermally stable systems

FIG. 3J.09



Detailing an Urban Parasite

Using cost effective materials to create a fungus-free environment

FIG. 3J.10

DETAIL DESIGN

RETROFITTING INFRASTRUCTURE

This technical study is an investigation into how existing vehicular infrastructure can accommodate a pedestrian-focused intervention.

The site of intervention is a key arterial which forms a bridge over the N1 highway. Bridges are highly-engineered and structurally sensitive, making building on them extremely complex. The design cannot introduce significant point loads, but rather must work within the existing structural grid and safety factor.

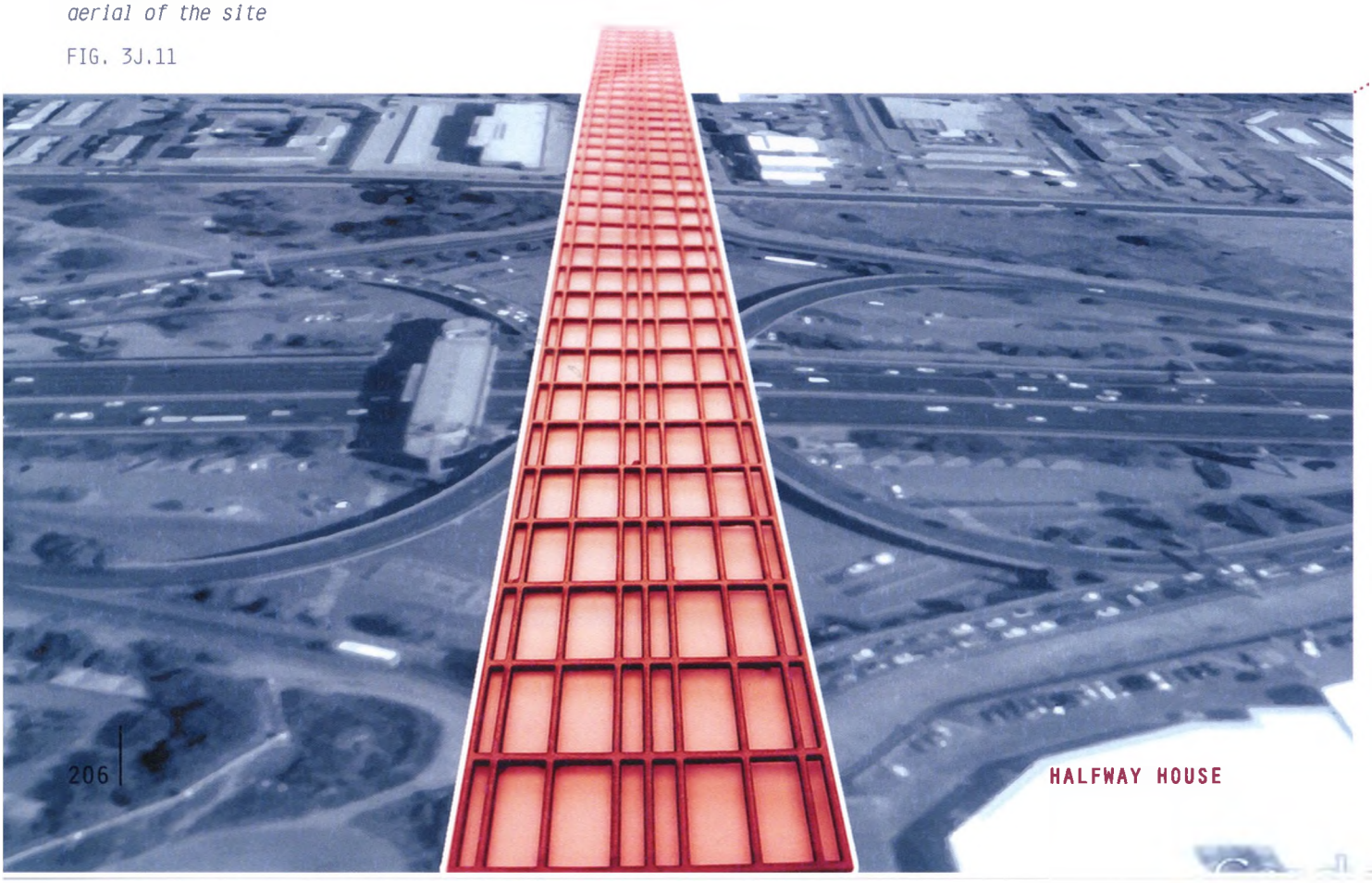
These principles are taken into consideration while working within the bridge's current structural grid, which informs the fuel station layout below. The short span is used on either side of the bridge to keep the members as light as possible – with the pedestrian bridge cantilevered through the centre.

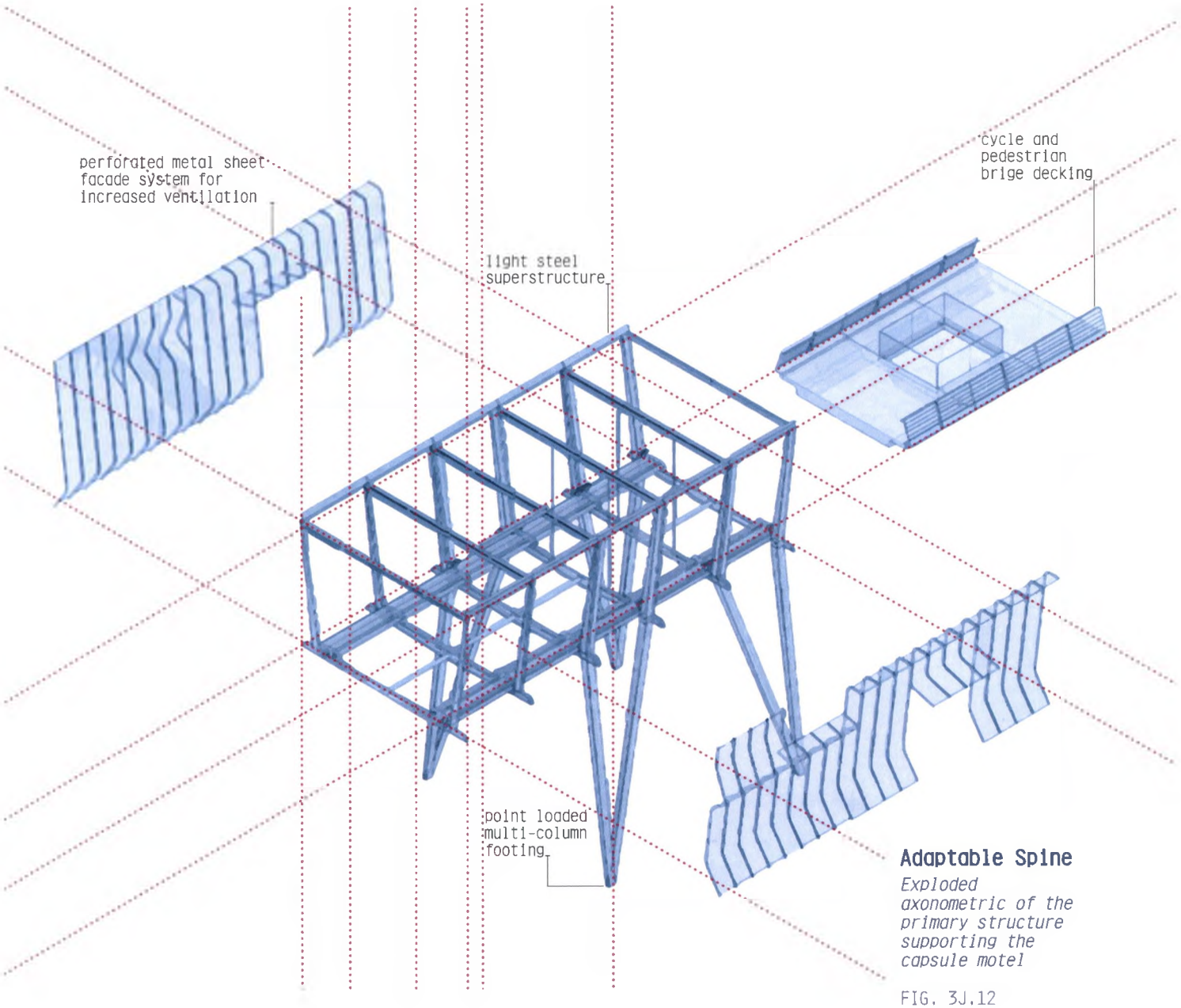
Thus, the existing structural grid of the bridge is superimposed onto the surface of the road and used as a tectonic reference.

Superimposing Structure

Sketch model of the 10x10m New Road structural grid laid over an aerial of the site

FIG. 3J.11

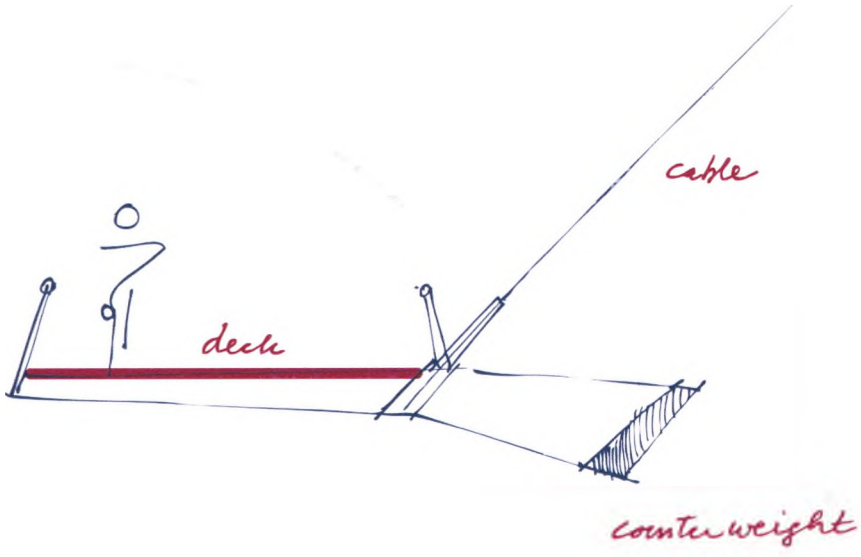




Adaptable Spine

Exploded axonometric of the primary structure supporting the capsule motel

FIG. 3J.12



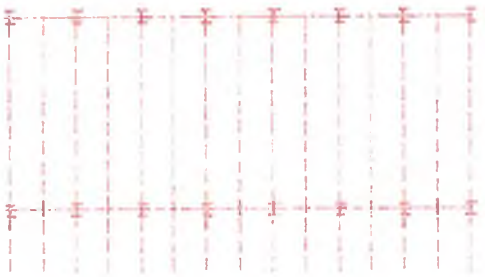
Linear Tension

Structural sketch of the cable stay bridge portion over highway

FIG. 3J.13

TWO-WAY BEAM SYSTEM

Large, column-free spans are required through various spaces of the concourse. It is for this reason that long-spanning girders are used to carry the primary beams, which in turn support a layer of secondary beams.



OPEN-WEB JOIST FRAMING

This framing system provides direct support for roof & floor slabs, transferring the loads imposed on the deck to the structural frame. The depth varies for each section along the concourse depending on the specific span required. The framing houses a portion of the building's service conduits within its depth.

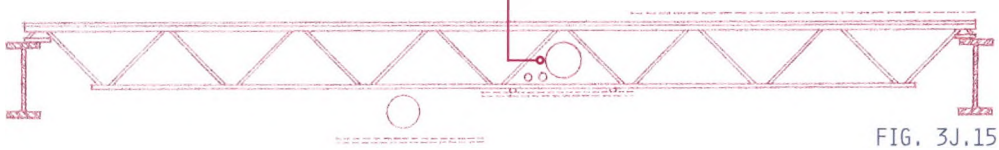


FIG. 3J.15

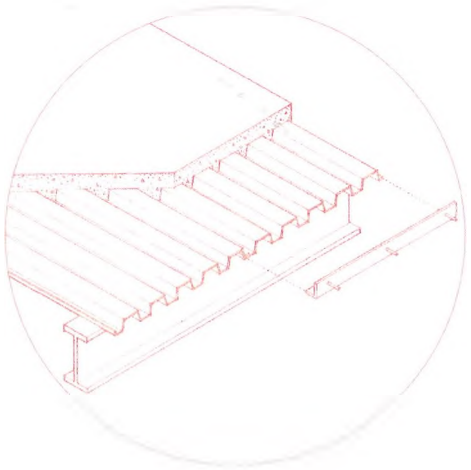
Permanent Shuttering

A composite system is conducive to construction above an active arterial

FIG. 3J.14

RIBBED METAL DECKING

The concourse platform is a composite steel deck floor, consisting of a profiled steel deck with a concrete topping. Included in the concrete is a light welded mesh reinforcement which acts to control cracking, to resist longitudinal shear.



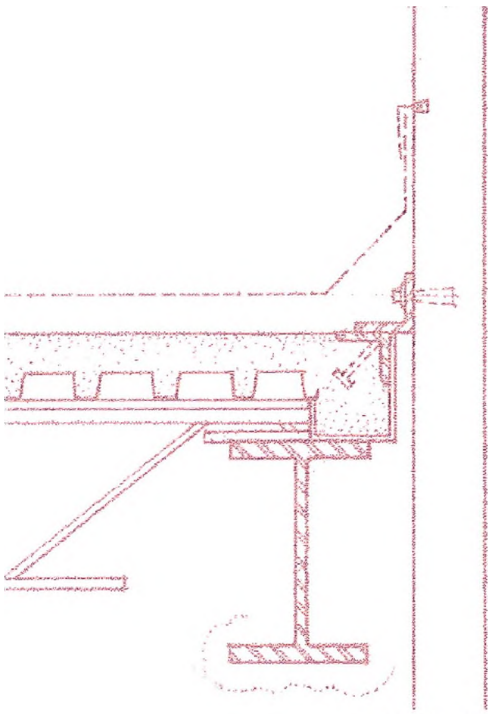


FIG. 3J.17

Versatile Structure

The concourse's primary corridor stretches 250m, requiring a consistent, yet adaptable system

FIG. 3J.16

STRUCTURAL MODULE

In order to support the floor slabs and roof sheeting over the multi-storey sections of the pedestrian concourse while maintaining the 10m grid, diagonal steel members are used as a tensile support for the columns whilst supporting the intermediate girders in compression.

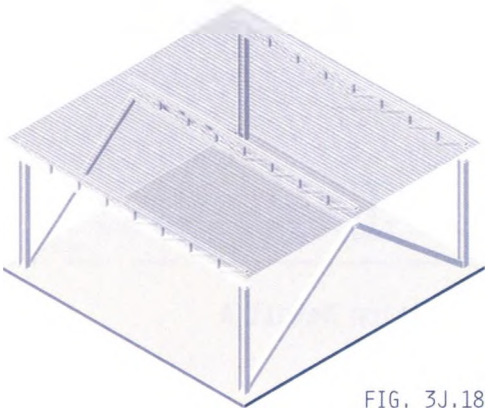
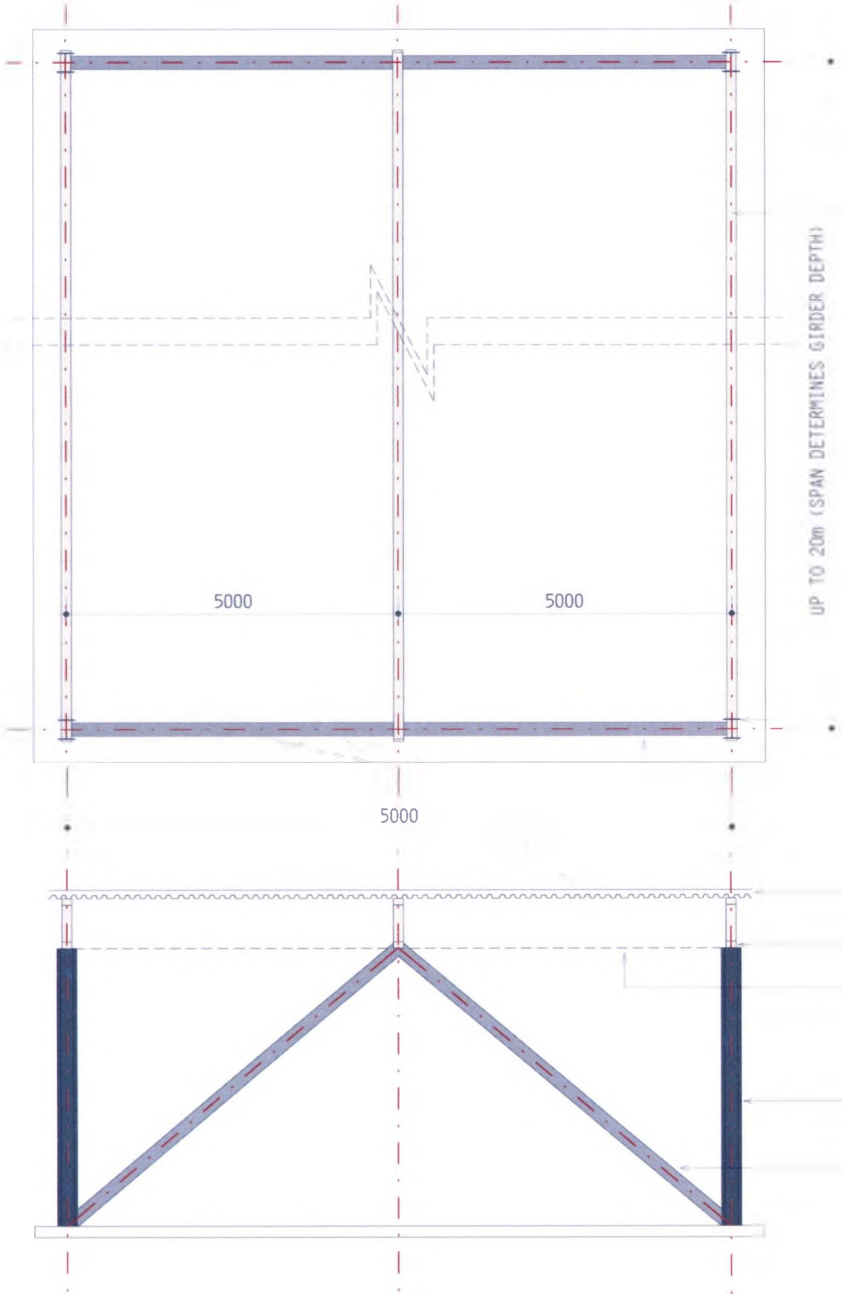


FIG. 3J.18



GIRDER EVERY 5m c/c

COLUMN EVERY 5m c/c

TO OPEN THE SPACE UP FROM COLUMNS, DIAGONAL COLMNS ARE AT 10m C/C & COME DOWN TO THE VERTICAL COLUMNS

ROOF: HULABOND CLADDIING
FLOOR: 65mm CAST-INSITU CONCRETE
BONDEK RIBBED METAL DECKING PROFILE

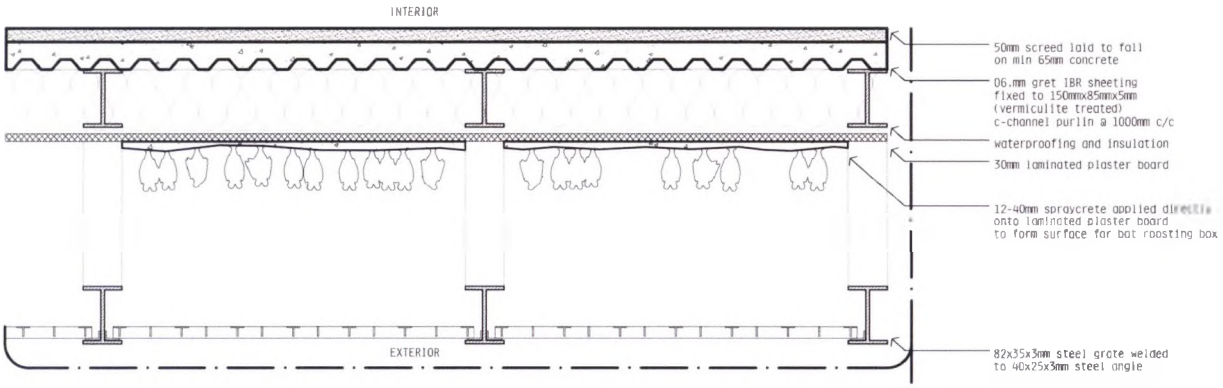
600-900mm DEEP STEEL GIRDER
(DEPENDING ON SPAN LENGTH)

(possible ceiling line)
15mm RHINOBOARD PLASTERED AND PAINTED

300mm x 250mm x 5mm FIRE RESISTANT COATED STEEL BOXED H-COLUMN

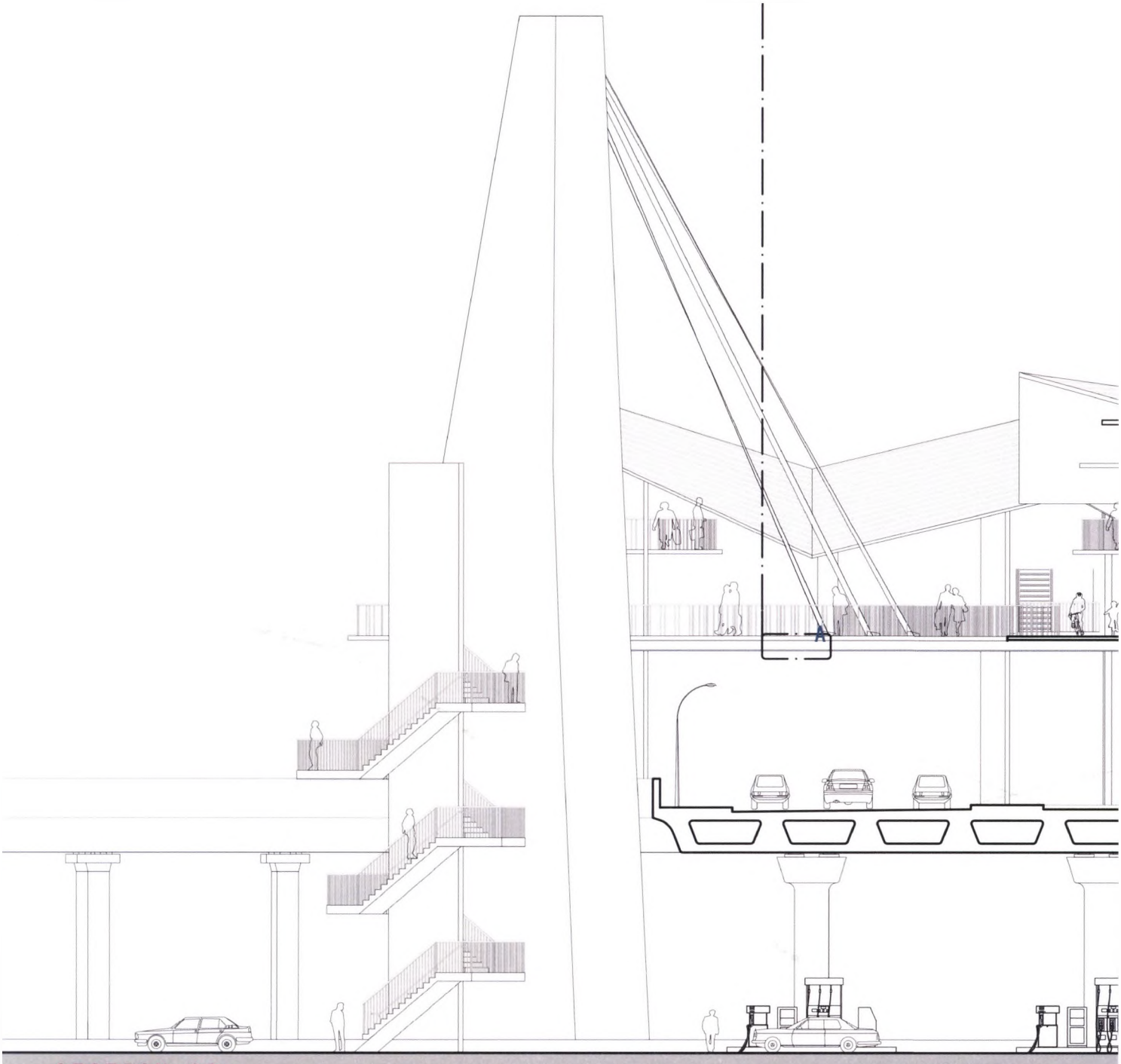
200mm x 200mm x 5mm FIRE RESISTANT COATED DIAGONAL STEEL SHS

FIG. 3J.19



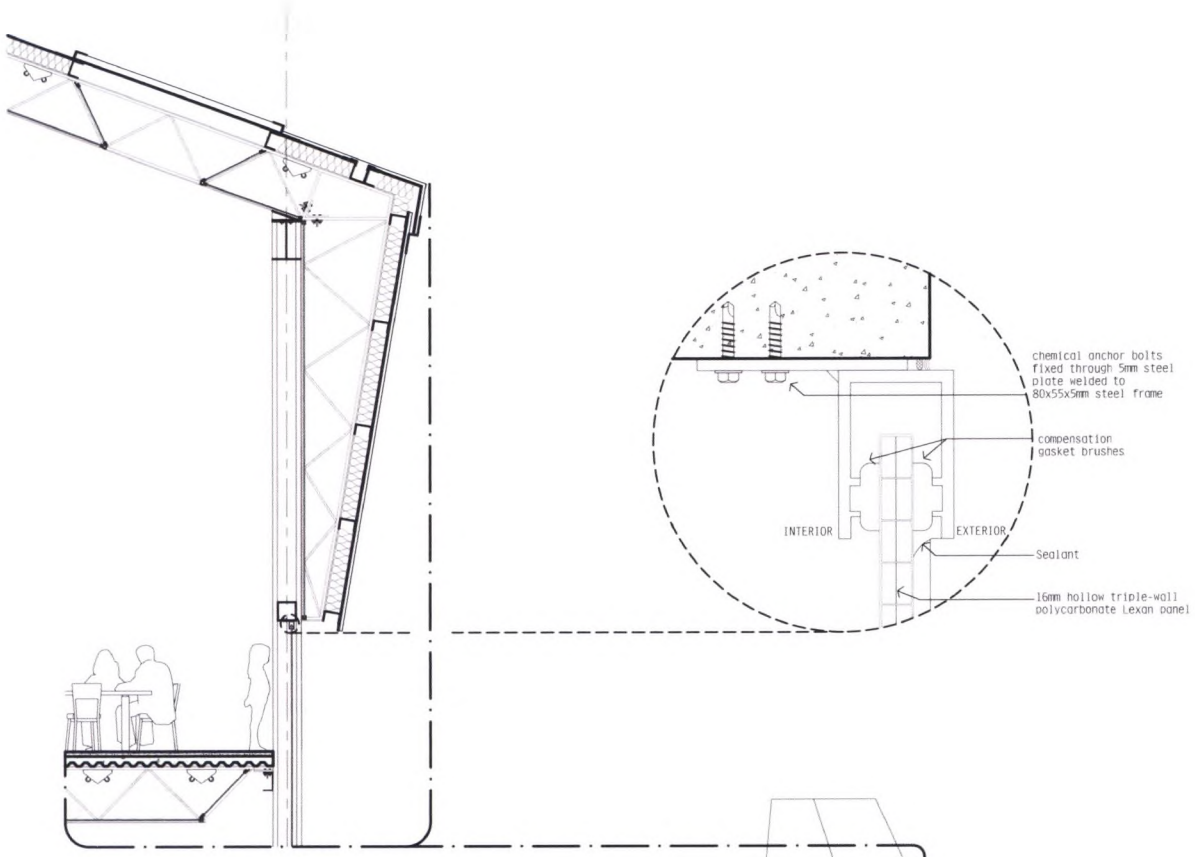
Section Detail A

1:20



SECTION CC

SCALE 1:200



Section Detail B
1:50

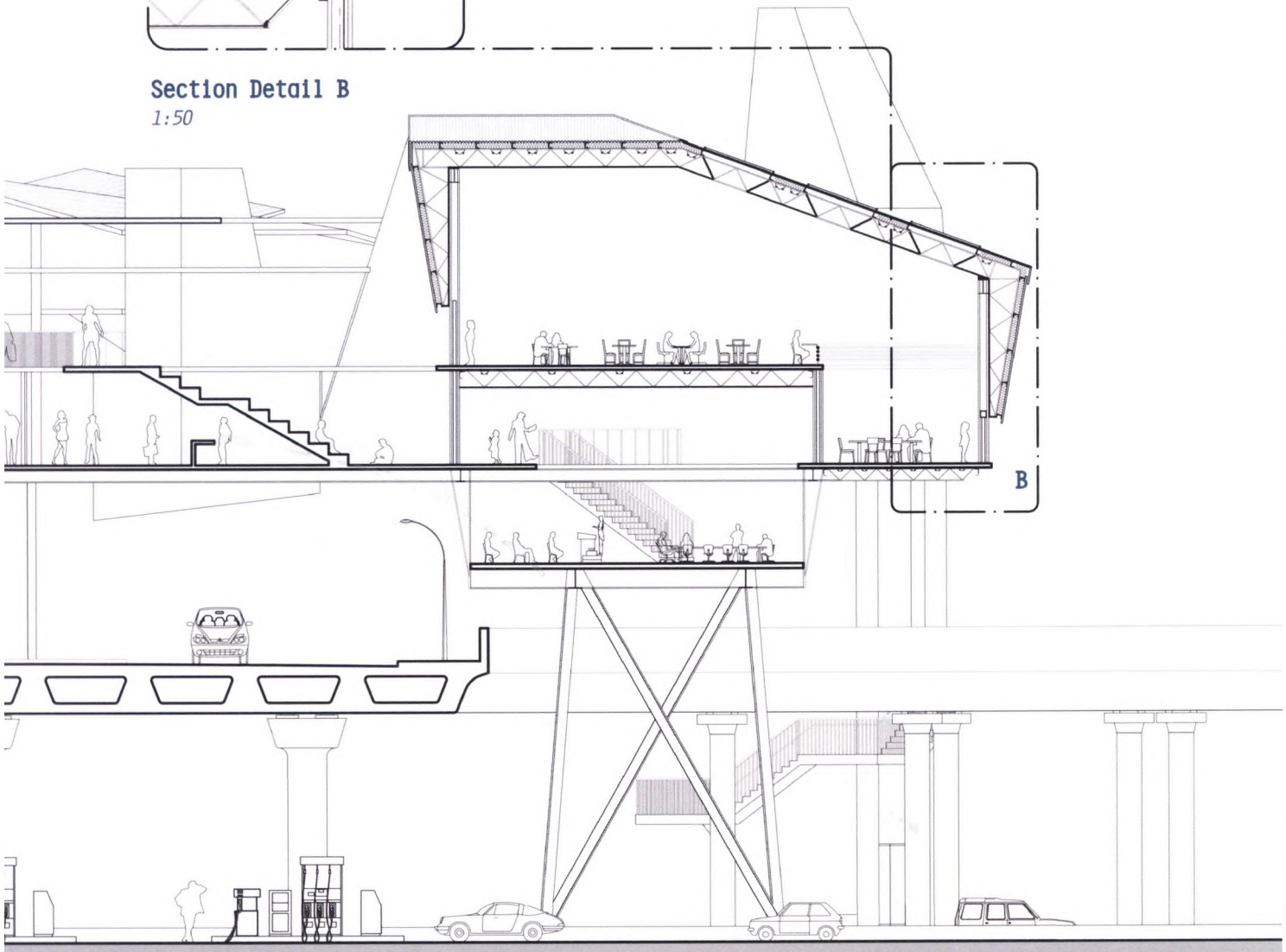
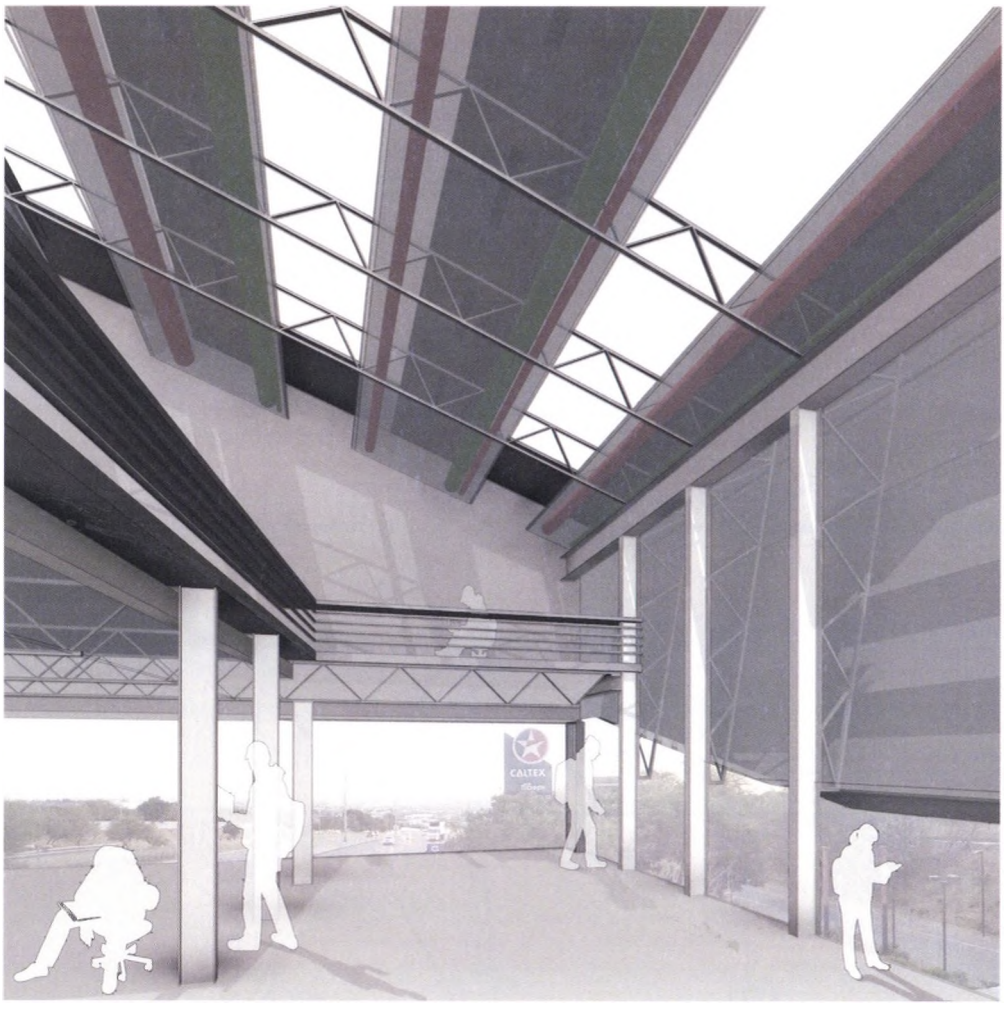


FIG. 3J.20

THE DUALITY OF SPACE & PLACE

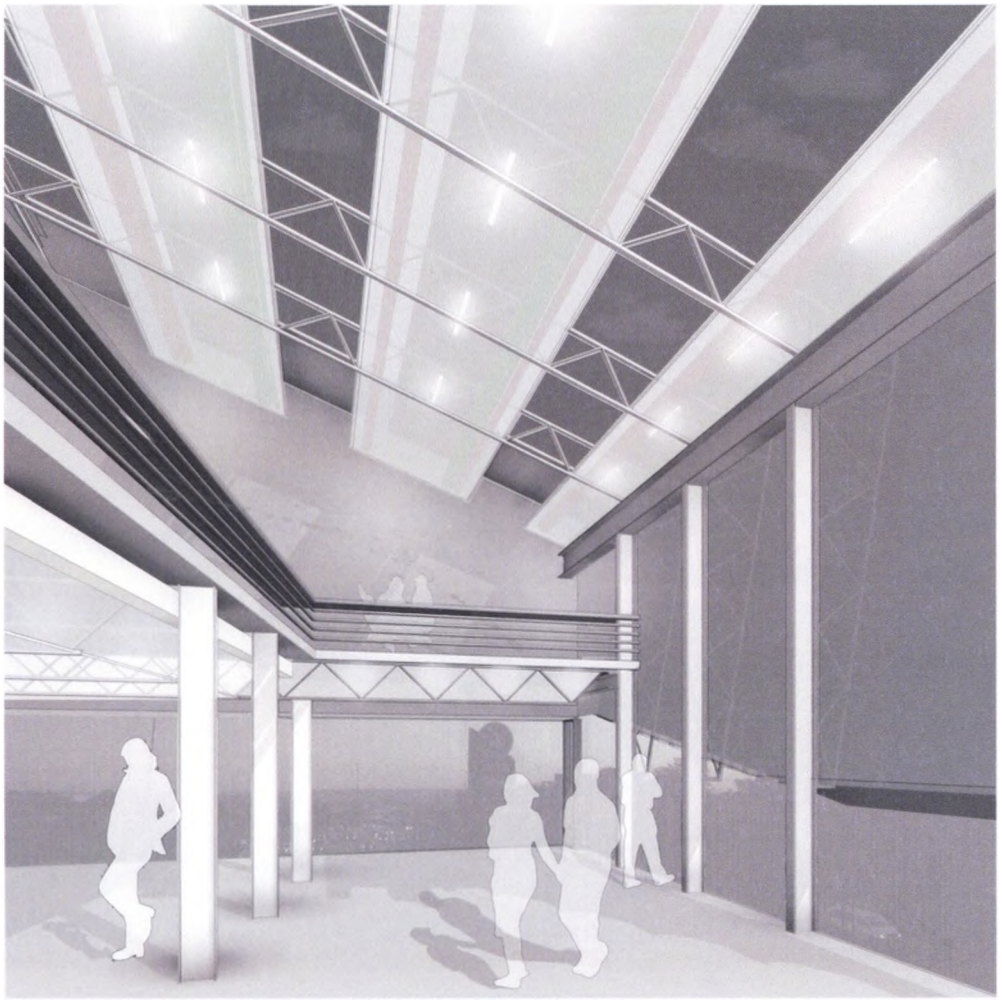
Historic Halfway House is characterized by its corrugated structures, which are emblematic of its past. An attempt is made to draw on this language and create a contemporary reading of these materials in their contemporary context. The building is therefore a steel frame structure with sheet metals forming a continuous membrane as walls forming a fluid building envelope. Meshes are also used in floor slabs at significant points for visual connectivity. The visual permeability changes according to the light and security needed at different intervals.

Furthermore, the choice of materiality reflects the duality of architecture which operates within a 24-hour cycle. The northern slope of the digital resource centre is formed by a series of the skylights together with a polycarbonate light box ceiling which carries a portion of the centre's services. Hence the building begins to transform with its use throughout the course of the day.



Day Render
Digital Resource Centre as a study facility for youths

FIG. 3J.21



Night Render

Digital Resource Centre as a place for social connection

FIG. 3J.22

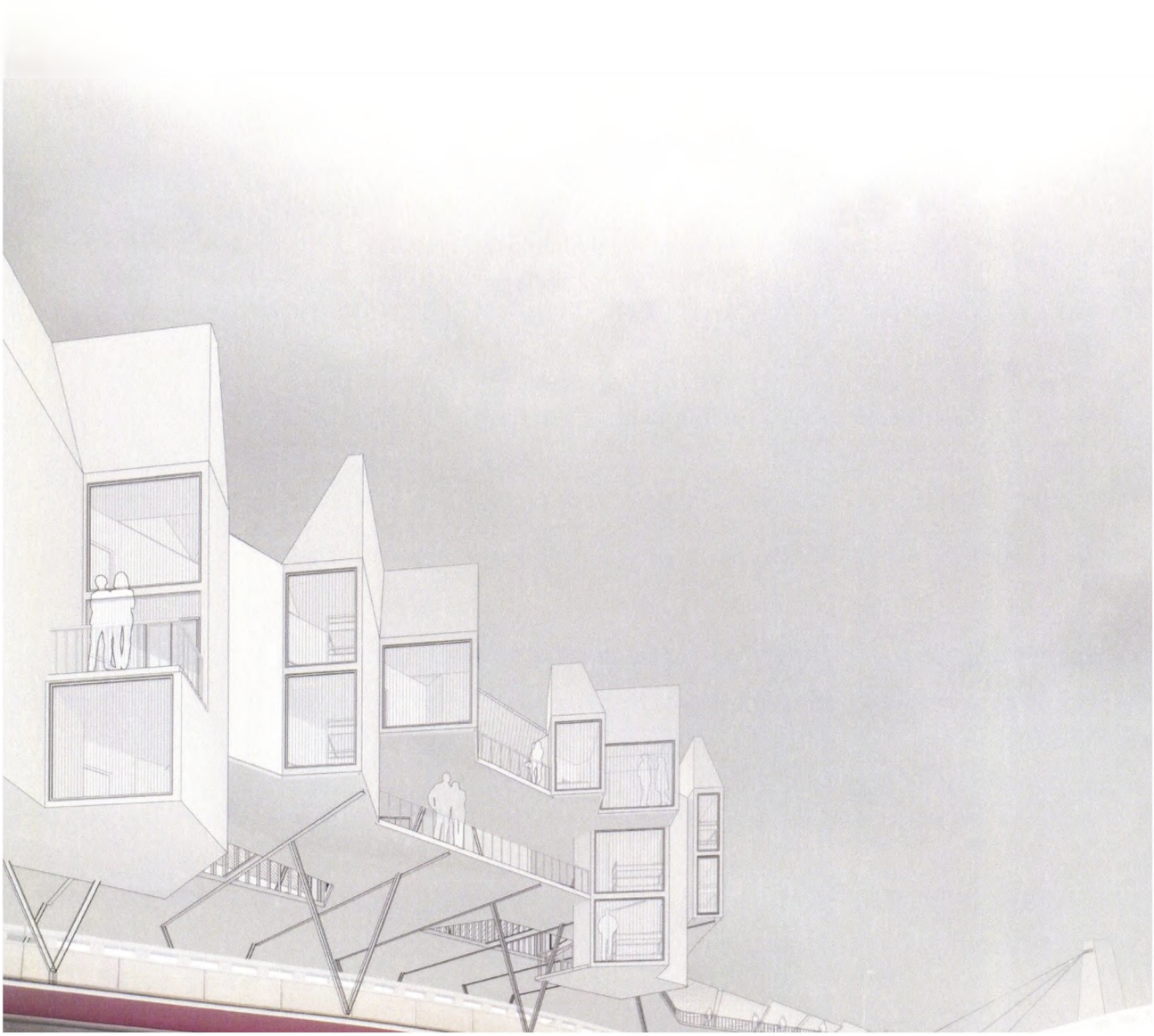
PART K

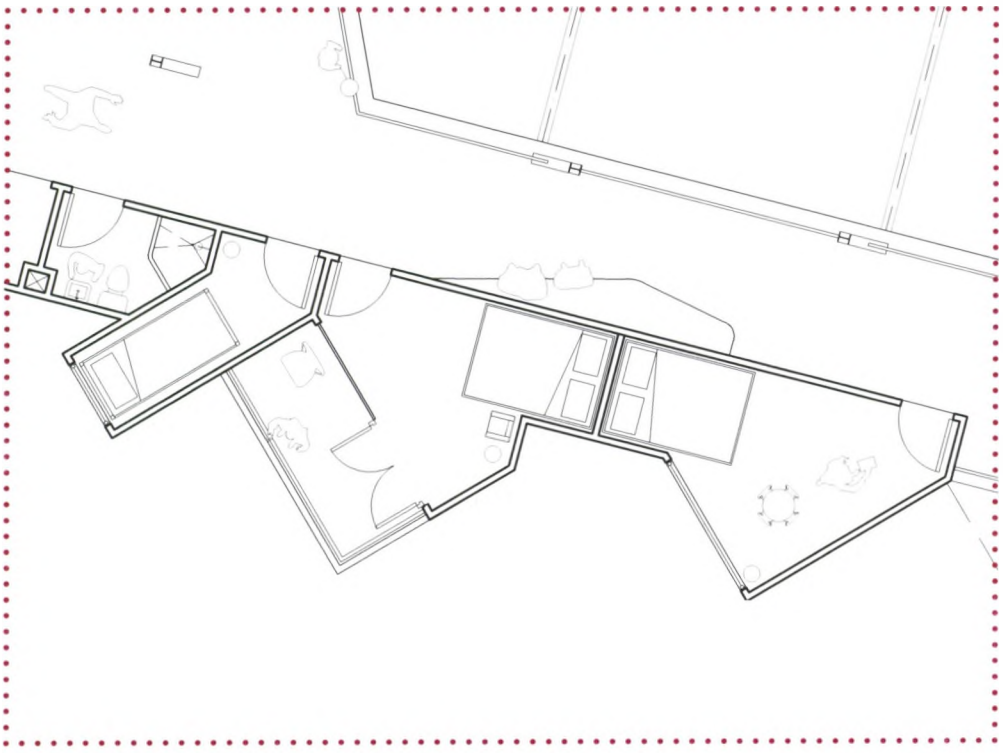
APPENDIX

FIG. 3K.01

FINAL DRAWINGS

DESIGN PROPOSAL

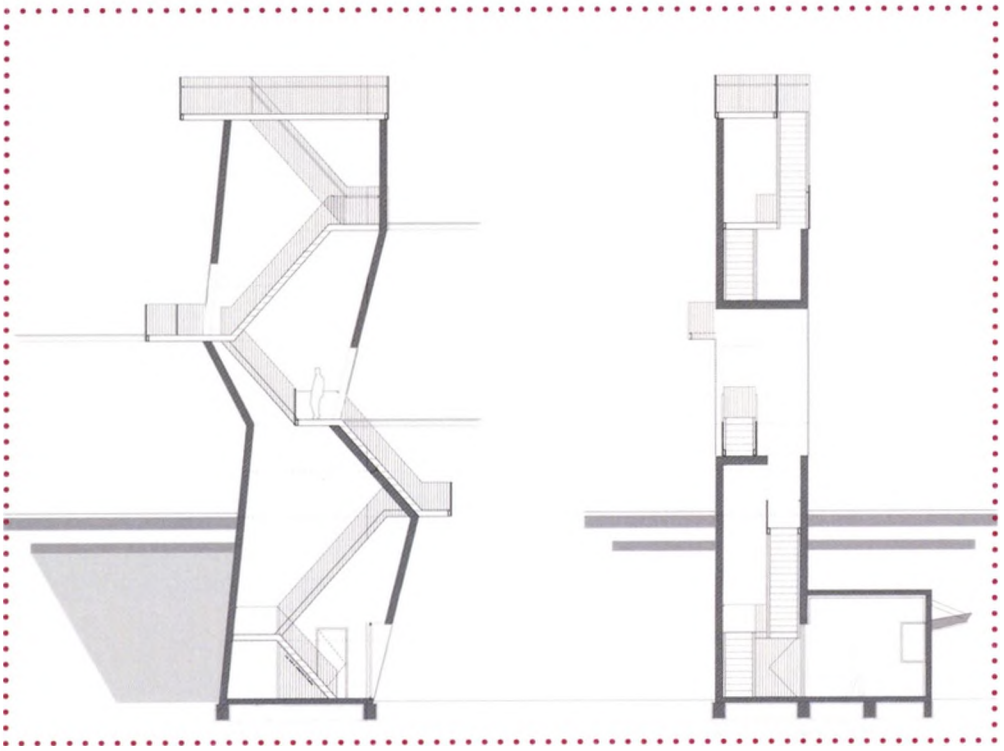




Capsule Motel
1:100

This facility for short term accommodation straddles the edge of the New Road bridge. It is located on the end of the site most conducive to privacy. The rooms are directly orientated towards a clear view of the vast Johannesburg skyline. In addition, the south orientation shields the rooms from the harsh morning light for patrons who may have only checked in during the early hours of the morning.

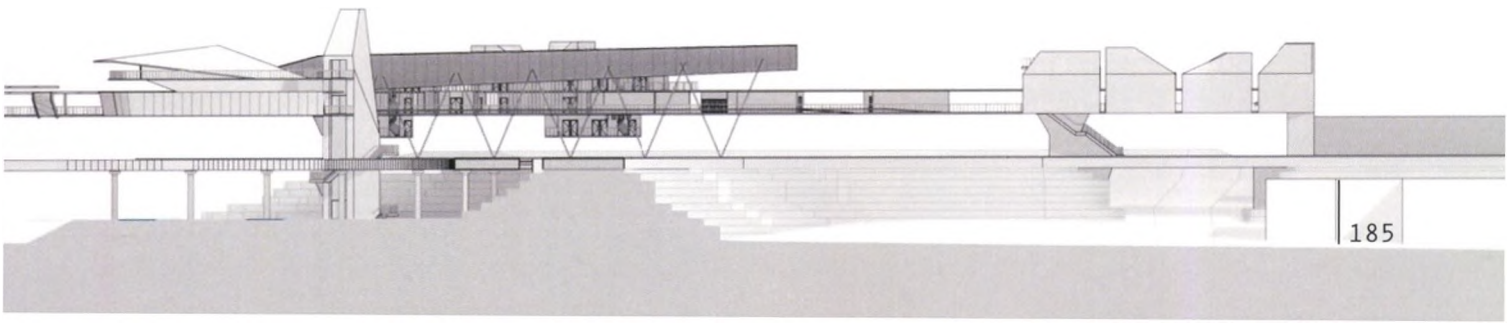
FIG. 3I.47

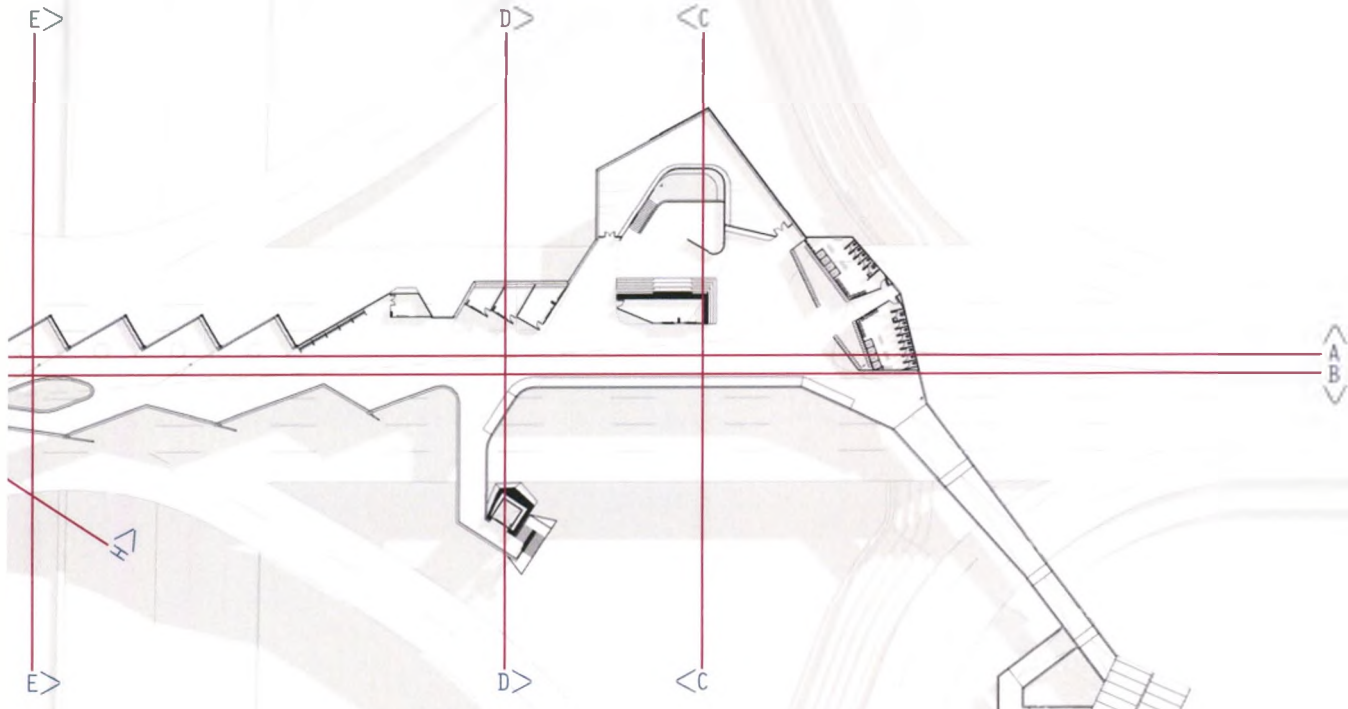


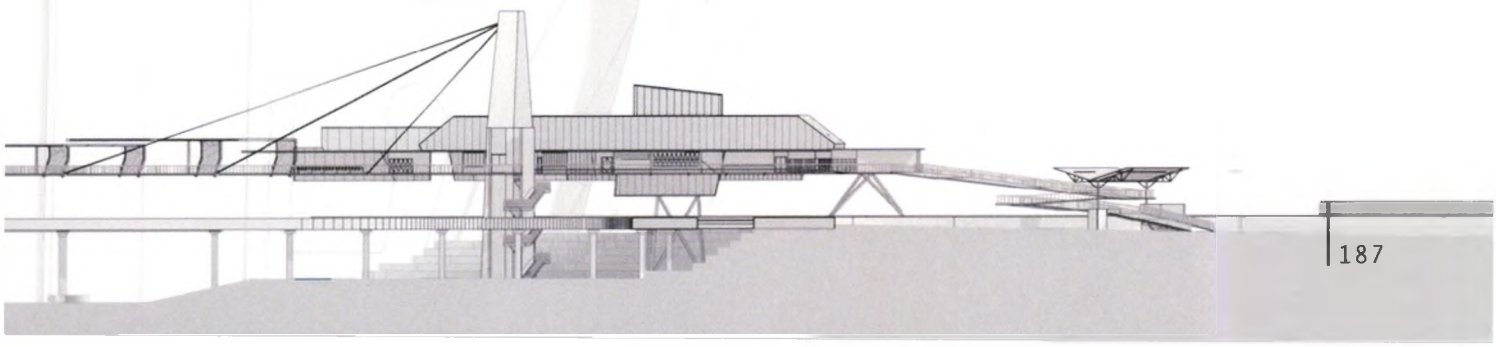
West Staircase
1:200

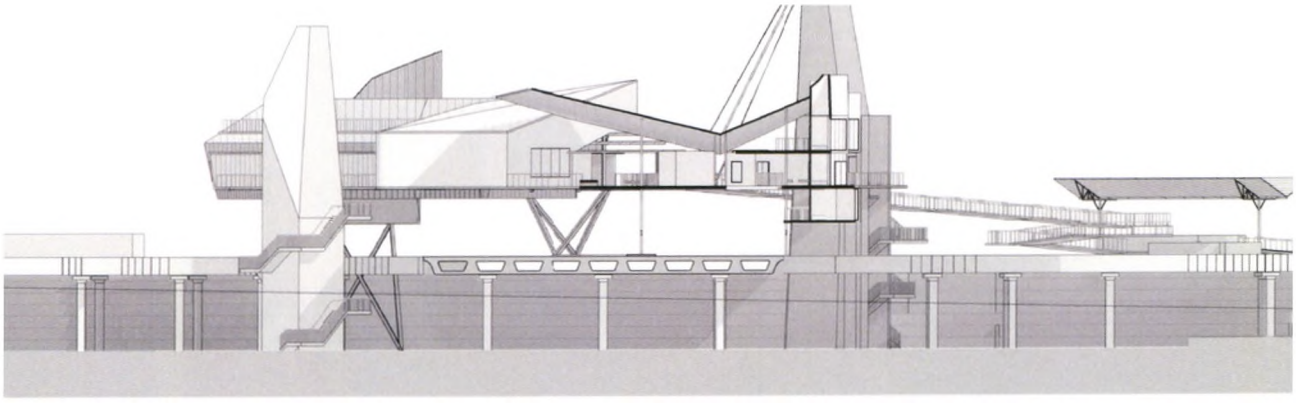
The staircase forms the primary gateway to the concourse from the west. It breaks through the existing gap in the bridge above 3rd Road. The first storey forms a retaining wall, before meeting the concourse itself. On the next floor are the legal advice offices, and finally it reaches a viewing deck. A concrete shell is formed as it wraps around a steel staircase.

FIG. 3I.48

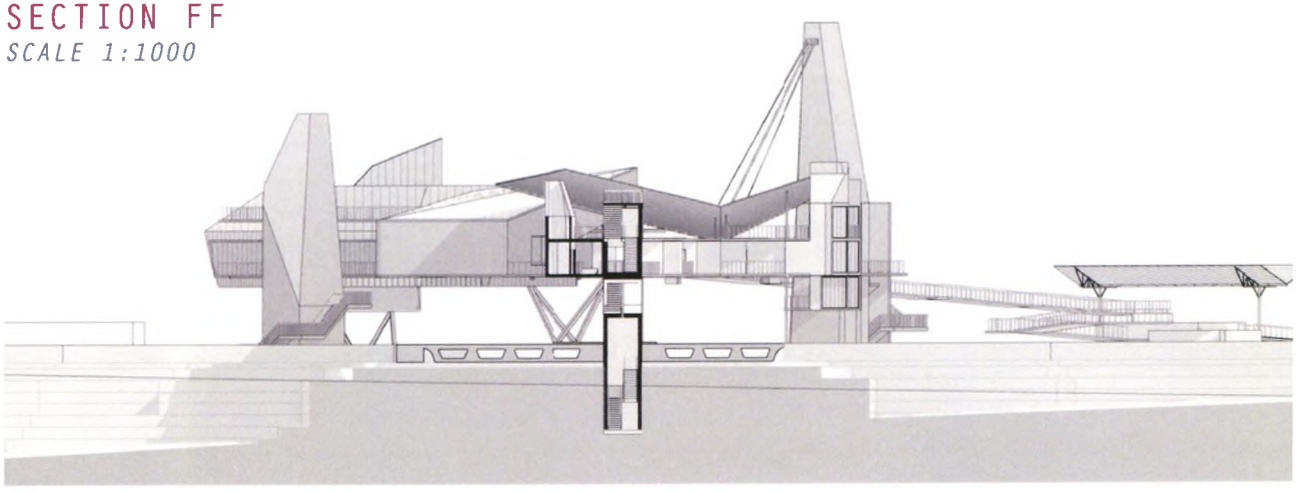



E
D
C
A
B
H
E
D
C

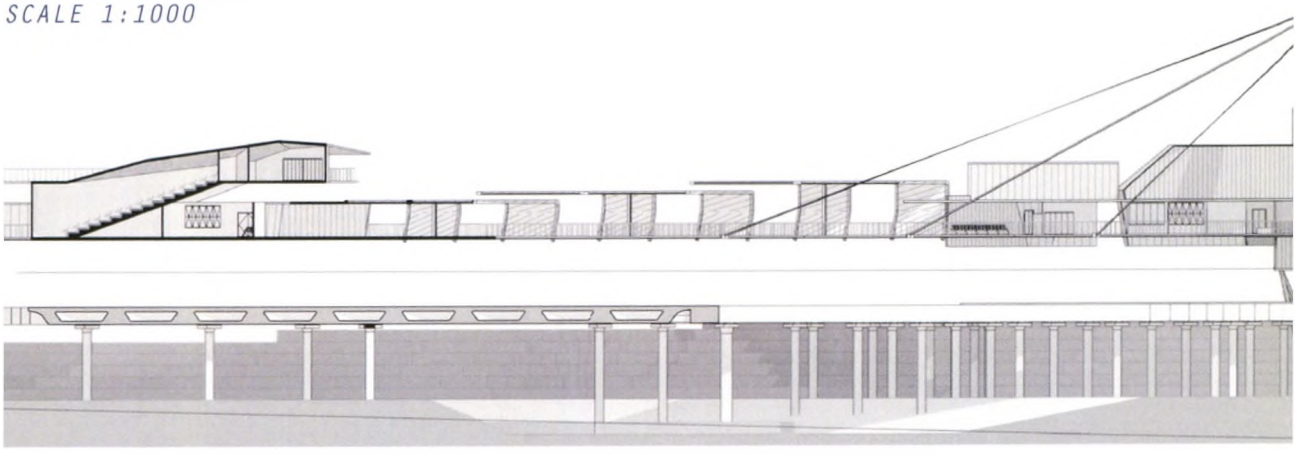




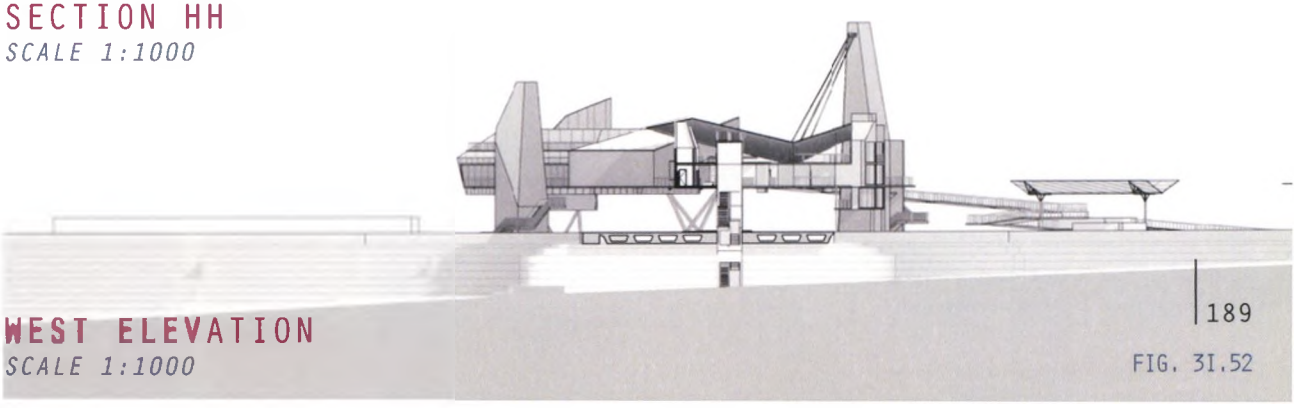
SECTION FF
SCALE 1:1000



SECTION GG
SCALE 1:1000



SECTION HH
SCALE 1:1000



WEST ELEVATION
SCALE 1:1000

FIG. 3I.52

THRESHOLD & NARRATIVE

The design response subsists between architecture and infrastructure. Anchored by the site's current infrastructural configuration, the concourse presents a pedestrian solution at the same scale. In addition, scattered along concourse are several architectural interventions.

From end to end, the pedestrian concourse reaches 350 metres. An architectural scale has been maintained throughout this length by dividing the concourse up into manageable thresholds. The programme is then independently structured within each segment.

The building seeks to bridge the scales between architecture, infrastructure and people. This section reveals the design response with regard to the individuals that it serves. Here, the focus is on the human narrative in relation to the architectural programme and context.

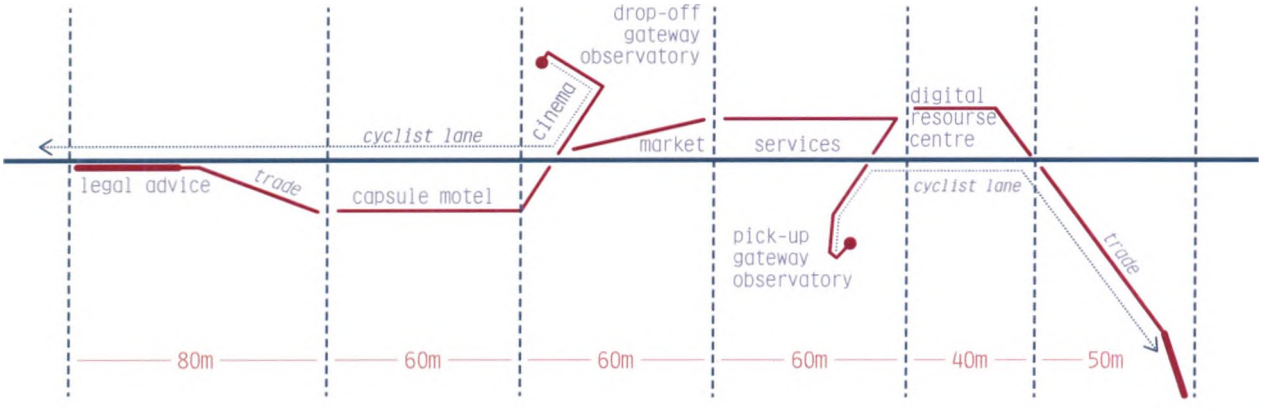
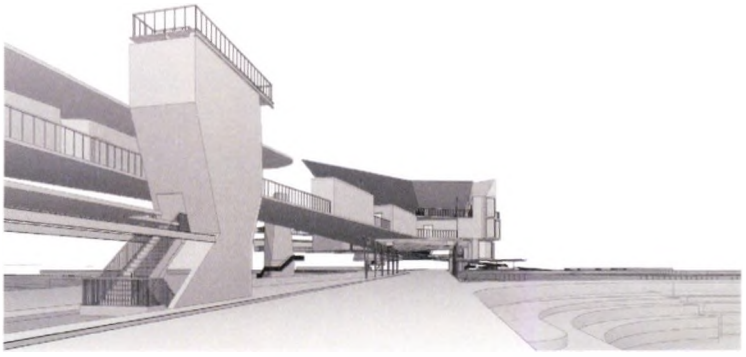


FIG. 3I.53

[1]

WESTERN ENTRANCE & LEGAL ADVICE OFFICES

The entry point from the west is formed through an existing puncture in the surface of New Road as it bridges over 3rd Road. 3rd Road runs parallel to the highway and serves as a popular route for pedestrians travelling north and south along the areas to the west of Halfway House. A staircase and an elevator are built into the embankment of the intersection, bounded by retaining walls. This structure provides vertical circulation to the concourse before forming legal advice offices on the second floor. These offices serve as a resource to people arriving and departing the country through the terminal, informing them of their legal rights and responsibilities.



Oblique view of concourse visible from the New Road bridge link over 3rd Road

FIG. 3I.54

Foreign National

An entrepreneur arrives from Mozambique unaware of her constitutional rights

FIG. 3I.56

Law Student

A 4th year Wits student volunteers her weekends offering legal advice to those without resources

FIG. 3I.57

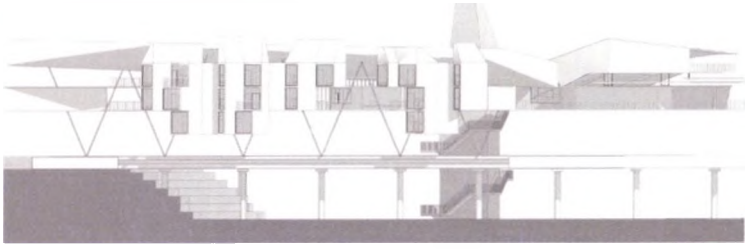
SCALE 1:500

FIG. 3I.55

[2]

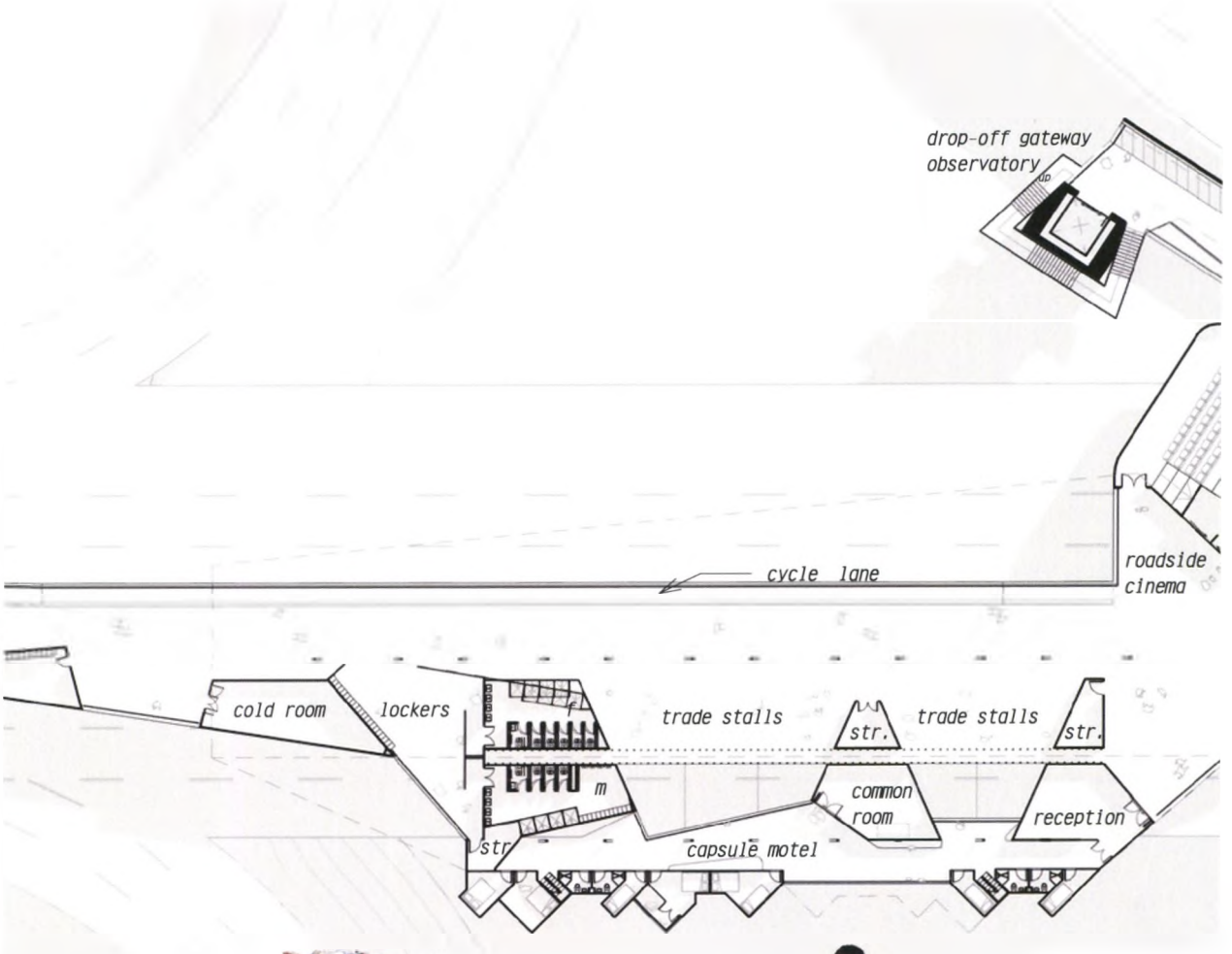
TRADE STATIONS, SERVICE POSTS & SHORT-TERM ACCOMMODATION MOTEL

Constructed above the portion most conducive to privacy, the capsule motel is exposed to minimal sun, noise and visual exposure. There is a range of thresholds between the primary concourse corridor and the motel bedrooms. This includes facilities for the pedestrians, vendors, and motel guests.



Fractional South Elevation

FIG. 3I.58



SCALE 1:500

FIG. 3I.60

Local Butcher

The roadside butcher is accomodated for, making use of a cold room and trading post

FIG. 3I.62

Resting Trucker

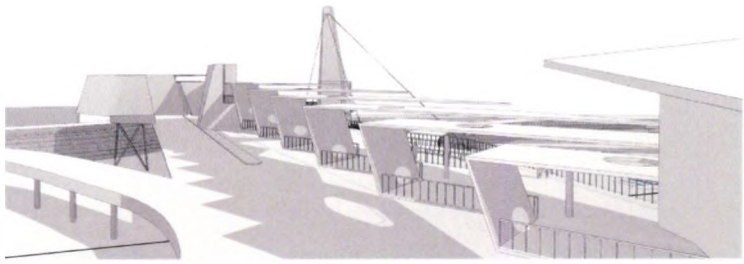
A truck driver pulls over for a 5 hour sleep en route to Maputo from Mossel Bay

FIG. 3I.63

[3]

DROP-OFF OBSERVATORY, MARKET & ROADSIDE CINEMA

The western observatory tower provides a direct view towards Pretoria as one rises from the drop-off terminal to the concourse itself. The cable stay bridge link supports a market space. The adjacent movie theatre complex pays homage to the city's historic drive-inn culture, with a reinterpreted pedestrian roadside cinema.



View from second floor of Drop-off Obserservatory down towards the suppended market along the cable stay bridge link

FIG. 3I.59

Moviegoers

A couple enjoy a local film while waiting for their bus to Durban to arrive

FIG. 3I.64

Gautrain Passenger

A local business-man uses the bicycle share hub to connect to a train to Pretoria

FIG. 3I.65

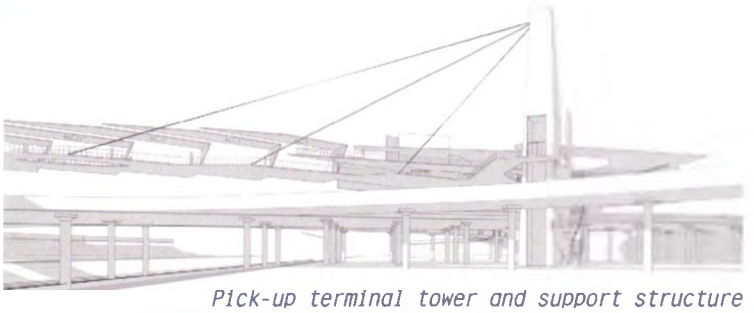
SCALE 1:500

FIG. 3I.61

[4]

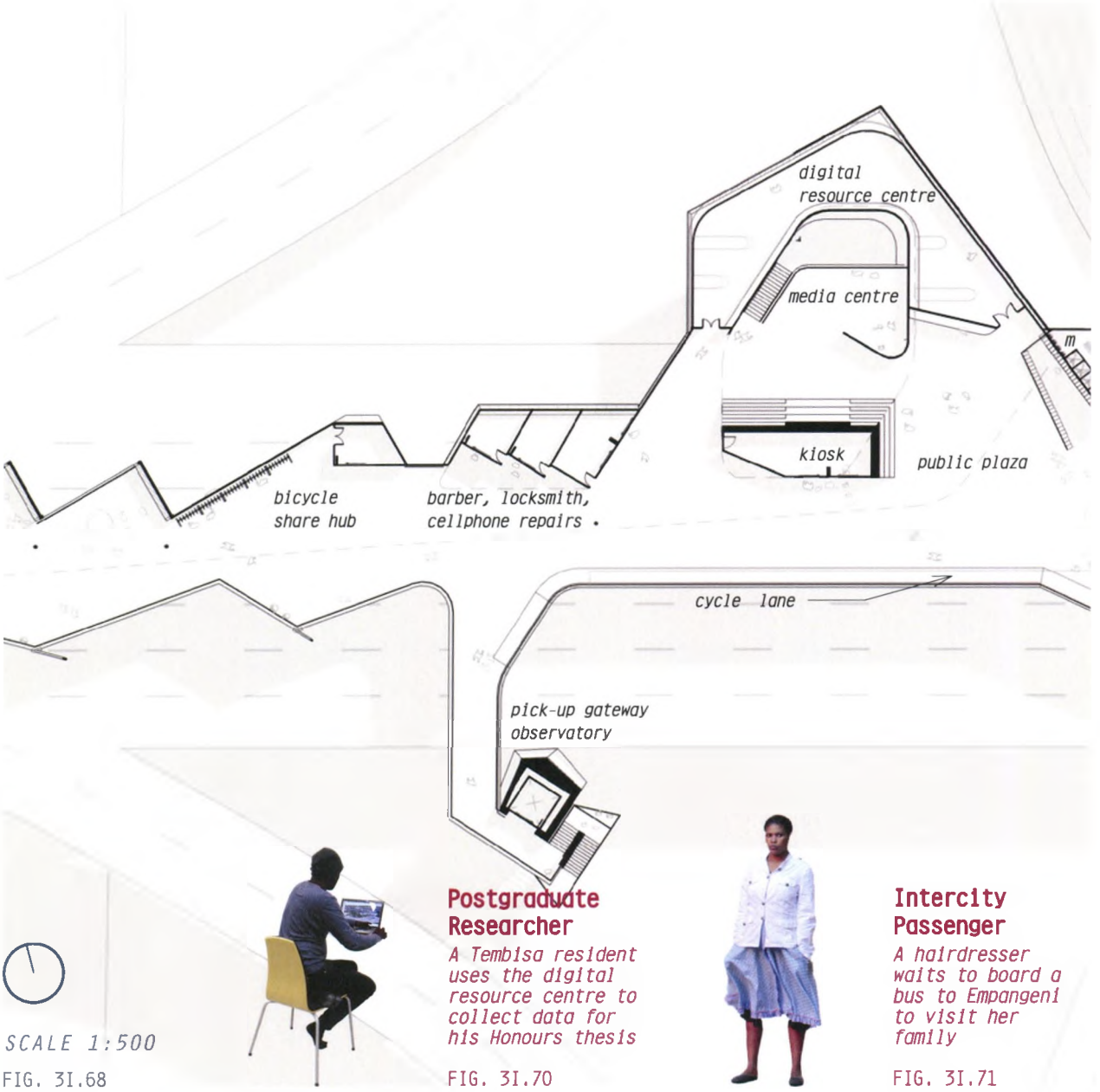
PICK-UP OBSERVATORY, SERVICES, PLAZA & DIGITAL RESOURCE CENTRE

The eastern observatory tower provides a layered panoramic view of Johannesburg's historic and contemporary skylines as one rises from the pick-up terminal to the concourse's platform. This section is the most accessible to the public, supporting a ticket office, digital resource centre, and a bicycle shareway hub.



Pick-up terminal tower and support structure within the existing infrastructural configuration

FIG. 3I.66



SCALE 1:500

FIG. 3I.68

Postgraduate Researcher

A Tembisa resident uses the digital resource centre to collect data for his Honours thesis

FIG. 3I.70

Intercity Passenger

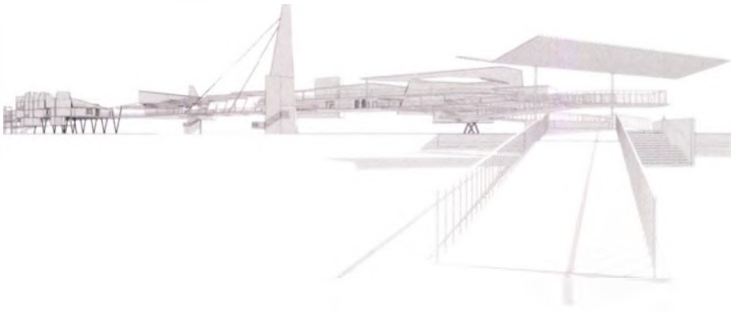
A hairdresser waits to board a bus to Empangeni to visit her family

FIG. 3I.71

[5]

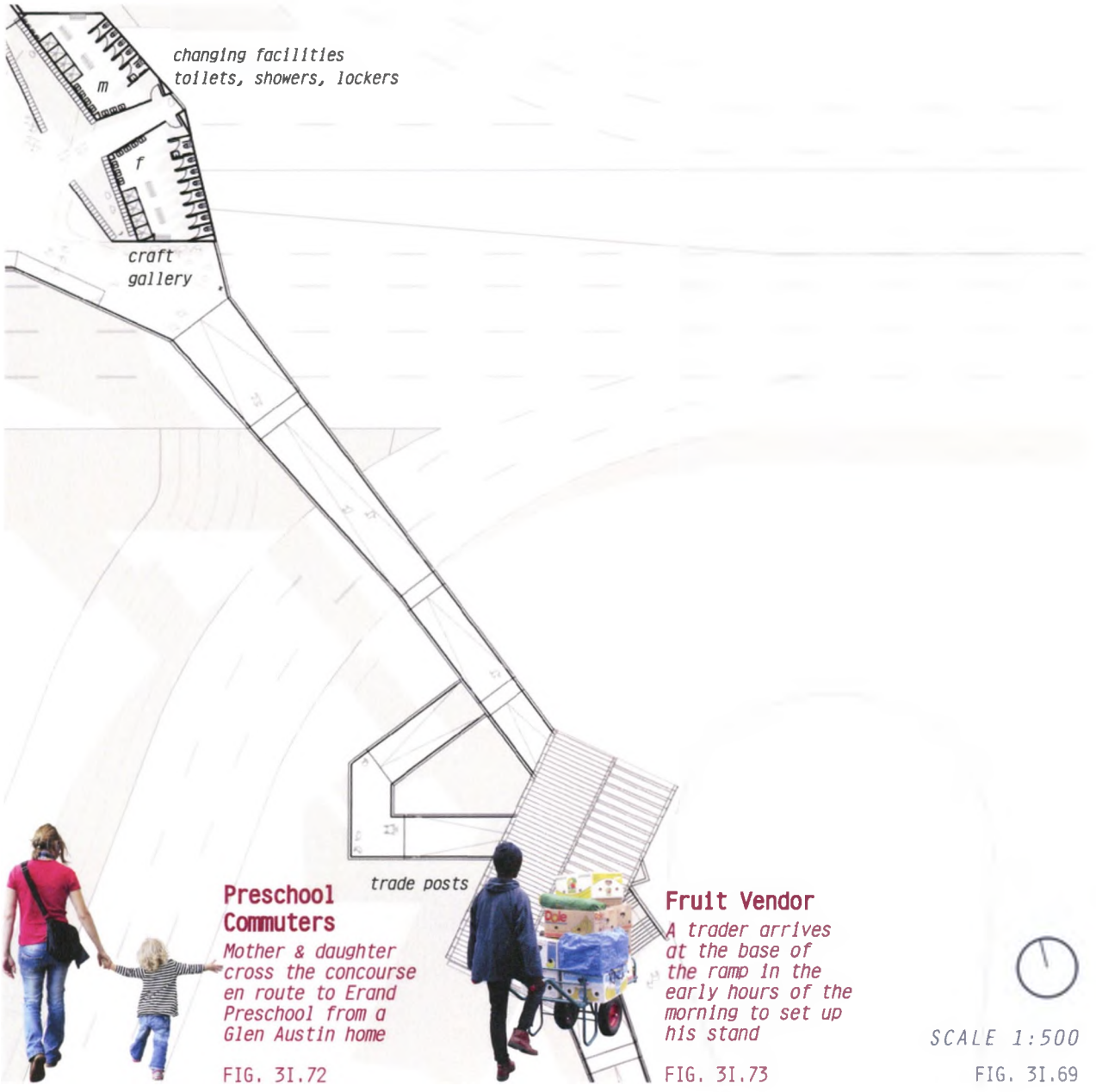
EASTERN ENTRANCE, TRADE & CHANGING FACILITIES

The sole concourse entryway from the east is formed at the point where pedestrians currently begin to decend down the embankment. Instead, the design proposes a ramp where users ascend along trade stalls. This culminates in a gallery space, behind which lockers, toilets, and showering facilities are organised.



Base of ramp from Bavaria Avenue cul-de-sac

FIG. 3I.67



Preschool Commuters

Mother & daughter cross the concourse en route to Erand Preschool from a Glen Austin home

FIG. 3I.72

Fruit Vendor

A trader arrives at the base of the ramp in the early hours of the morning to set up his stand

FIG. 3I.73

SCALE 1:500

FIG. 3I.69

PART J

TECHNICAL DEVELOPMENT

FIG. 3.1.01

STRUCTURE & MATERIALITY

PARASITIC CONNECTORS

FIG. 3J.02

PARASITIC CONNECTORS

The design focuses on the adaptive re-use of existing transit infrastructure. The building's structural system is derived from the site's parasitic lighting posts, indicators, and signage. These allow for minimal footprint, as they clamp along to the edge of the bridge and are grounded within the roadway's central island.

A key reality in any intervention across a national arterial is the inability to attain site handover. Due to the necessity to maintain a consistent flow of traffic, it is not possible to clear the site for construction. These conditions call for innovative structural solutions. South Africa is steeped in a history of low-cost manual labour. This has led to a predominate of wet construction practice. However, this is not practical for the context at hand. Instead, rapid on-site assembly must be achieved while working within the site's accessible surfaces.

Min. Footprint
Max. Visibility

Photographs of the parasitic roadway connectors along New Road bridge

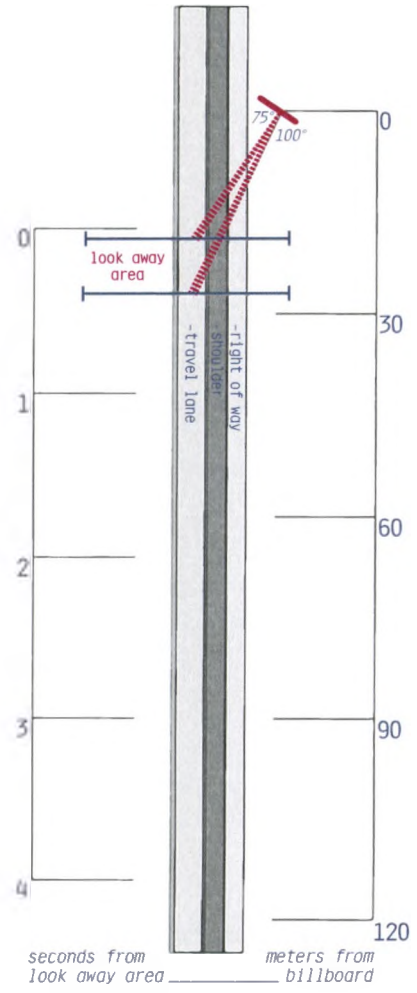
FIG. 3J.03

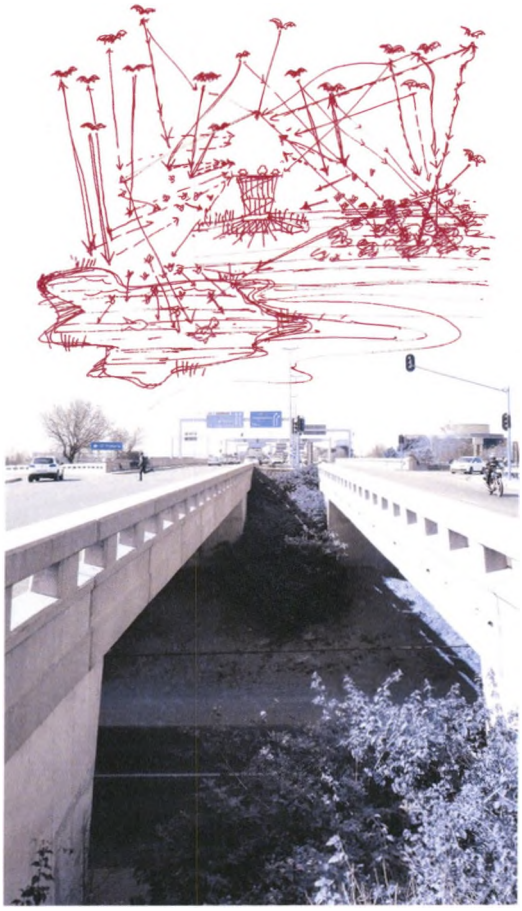
VISUAL COMMUNICATION

The highway is a place of strong visual connectivity. Shortly after the mass rollout of the motor vehicle, businesses have been using this to their advantage through roadside advertising. This form of visual communication has manifested itself globally. A prime example of this is the billboard. This oversized display panel relies on simple mechanics, characteristic of high impact stationery displays. These platforms are ideal for high-speed information exchange.

ACCOMMODATING ECOSYSTEM

Supermodernity has blurred the lines between the artificial and natural landscapes. This is especially evident in way in which the vernacular bat species have taken refuge within the New Road bridge. This is as a result of the ever-expanding urban construct. It is the author's opinion that these circumstances have resulted in a need for humanity to take responsibilty for sensitively incorporating the affected species within the built environment.





3 Second Conversation

Time/Speed/Distance Diagramming the approach to a billboard at 90km/h (left)

FIG. 3J.04

Between Habitat & Highway

Sketching the reformed ecosystem of the local straw-coloured fruit bat (right)

FIG. 3J.05

CASE STUDY: BAT BILLBOARD

Year: 2008
Site: New York City
Architects: Chris Woebken &
Natalie Jeremijenko

This interactive billboard facilitates interactions between bats and humans. The habitat uses the structure of a billboard and provides luxury housing for bats, addressing the environmental health emergency faced with New York bats known as White Nose Syndrome.

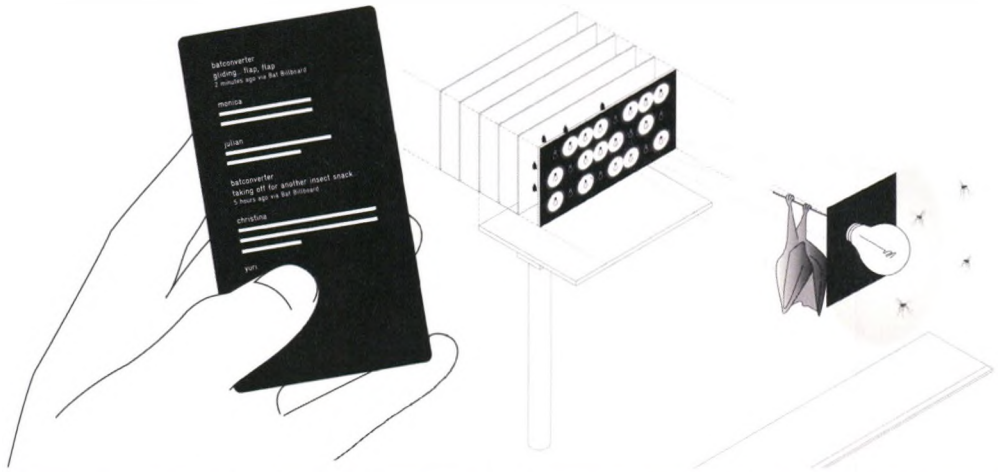
WHY BILLBOARDS?

1) Underutilized structure
2) Opportunity for visibility
3) Create a new form of advertising
4) Easily adapted with habitat housing
5) Interfaces for understanding
   i.e. Tweeting

MIMICKING HABITAT

Bats and birds with their 'seed rain' rival humans in their imprint on the terrestrial ecosystems. Bats manage mosquito populations more cost-effectively (up to 20 000 mosquitoes can be devoured by a single bat and turned into potent fertilizer) and without having to use uncontainable poisons. They are the insect control super-force. Bats can be attracted through providing a habitat with dampened temperature cycles such as found in caves, restricted openings and cling-able surfaces. Their proximity to water can add waterborne insects to a healthy varied diet. The moth attraction of the ubiquitous street-lighting in an urban context provides the equivalent to fast-food fly-thru outlets for the bats.

Bats navigate with echolocation to precisely locate insects in the dark. These ultrasonic bat calls can be made audible to the human hearing range with bat-detectors. Biologists are building libraries to map bat chatter, in order to be able to decipher their social conversations. Through voice recognition software, the billboard becomes an interactive display and a public face for the bats, enabling them to communicate with us about their needs in the urban environment. This communication can be playful and has the potential to create a previously unseen form of viral advertising, as well as an ongoing attention to fostering, studying, and maintaining the bat population therein.



Visual & Technical Translation

The billboard would display the playful and informative 'human interpreted' message on screen- translating their habits and activities so that humans can easily understand them

FIG. 3J.06

AIDING AN URBAN BAT EPIDEMIC

White nose syndrome is an emerging disease affecting urban North American bats, and responsible for 5.7 million bat deaths over the last 20 years. The architects conducted research in the new and promising strategy of holding the temperature above that which the white nose fungus can survive. This resulted in design developments for a modular temperature controlled system to create thermally stable refuge.

CHEAP, FEASIBLE, RELIABLE

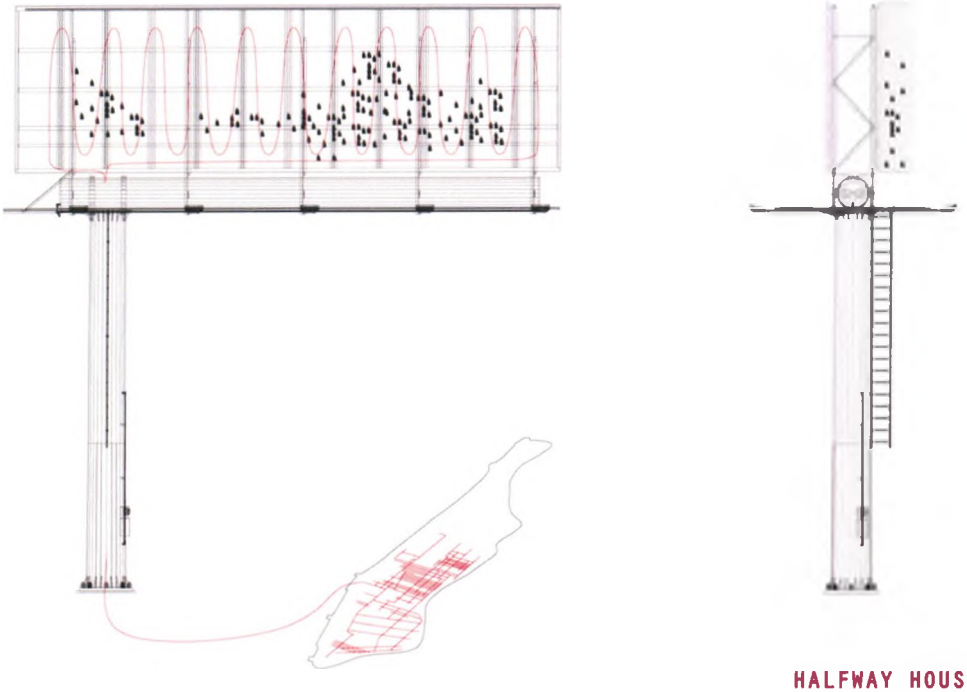
This artificial habitat has been built out of a cost-effective insulating foam lined with with soil propagation mats. This is used to adjust and understand preferences of bats towards temperature controlled habitat in conditions where the fungus is unlikely to grow.

1) Insect supporting plantings
2) Soil as insulation
3) Soil propagation mat
4) Insulation material

Bat Behavior

The misconception about bats is that they are threats and pests, when they actually provide insect control, pollinate plants, and play an important role in the ecosystem

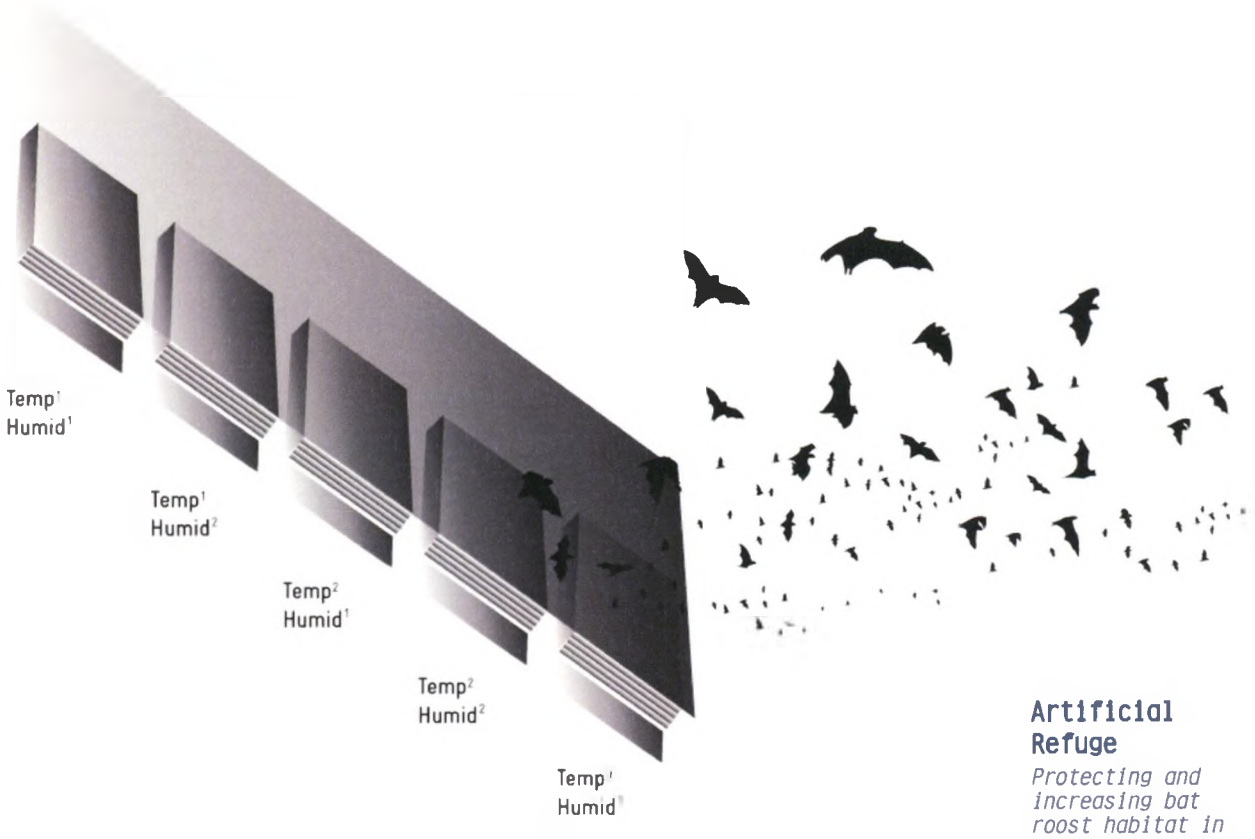
FIG. 3J.07



Retrofitting Existing Technology

Using sound processing technology to convert calls which sound like beautiful patterns of clicks that are very similar to electronic music

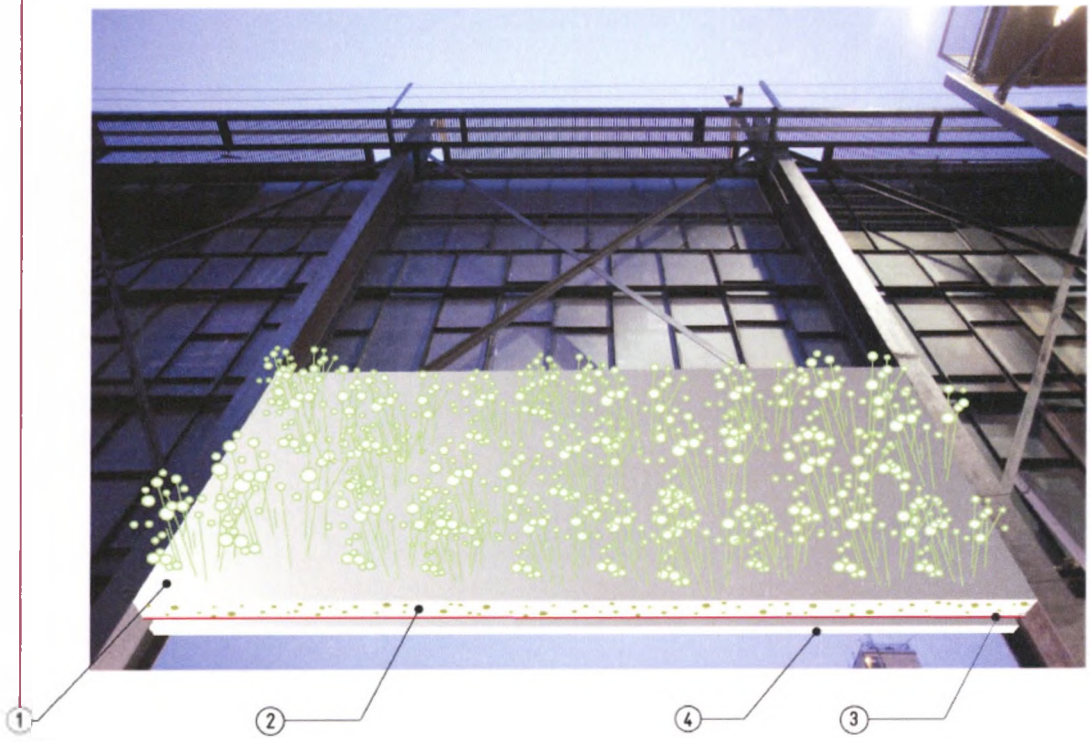
FIG. 3J.08



Artificial Refuge

Protecting and increasing bat roost habitat in urban environments through thermally stable systems

FIG. 3J.09



Detailing an Urban Parasite

Using cost effective materials to create a fungus-free environment

FIG. 3J.10

DETAIL DESIGN

RETROFITTING INFRASTRUCTURE

This technical study is an investigation into how existing vehicular infrastructure can accommodate a pedestrian-focused intervention.

The site of intervention is a key arterial which forms a bridge over the N1 highway. Bridges are highly-engineered and structurally sensitive, making building on them extremely complex. The design cannot introduce significant point loads, but rather must work within the existing structural grid and safety factor.

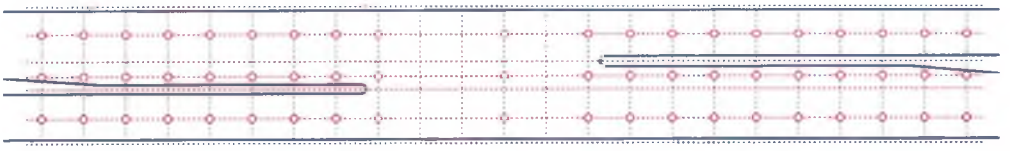
These principles are taken into consideration while working within the bridge's current structural grid, which informs the fuel station layout below. The short span is used on either side of the bridge to keep the members as light as possible – with the pedestrian bridge cantilevered through the centre.

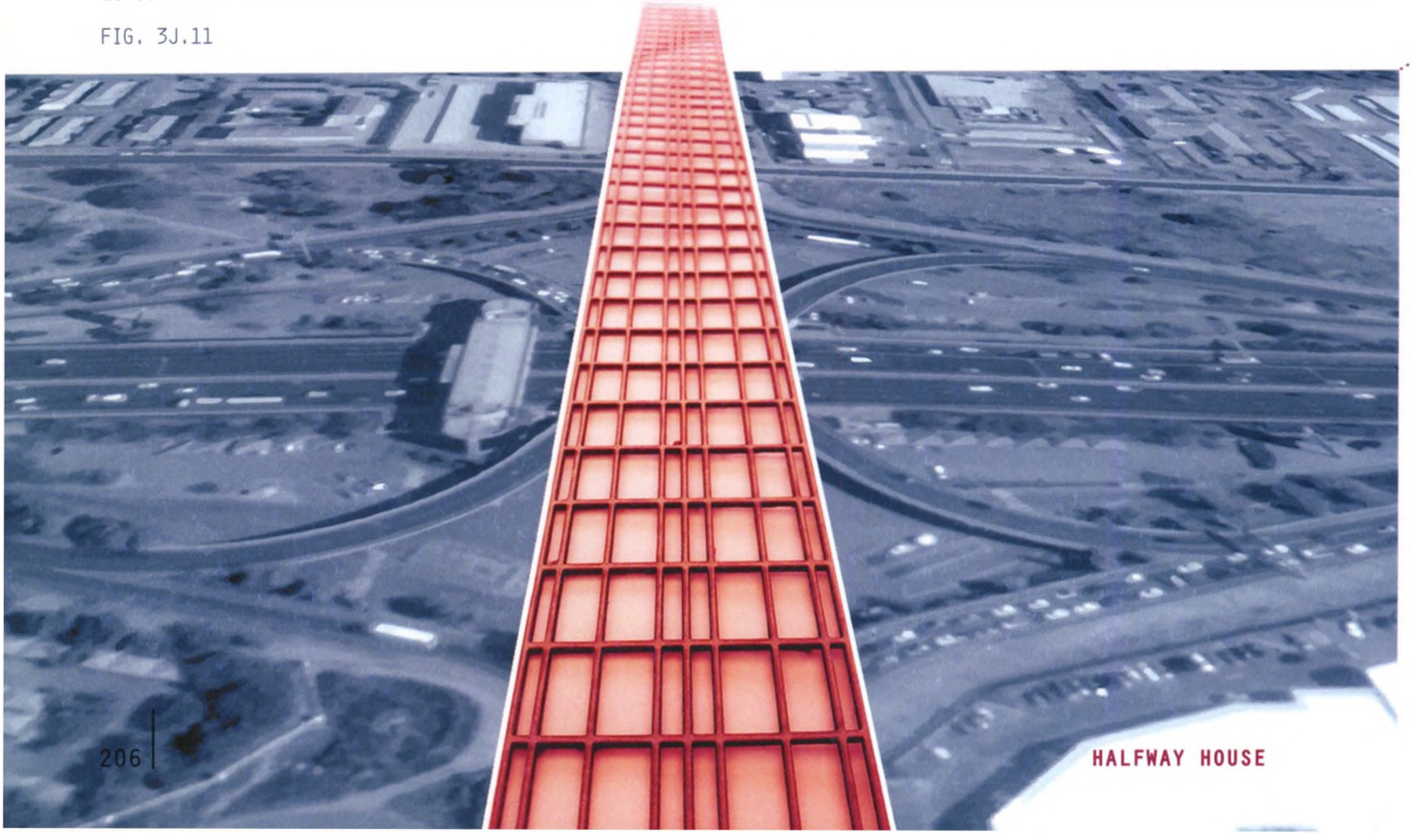
Thus, the existing structural grid of the bridge is superimposed onto the surface of the road and used as a tectonic reference.

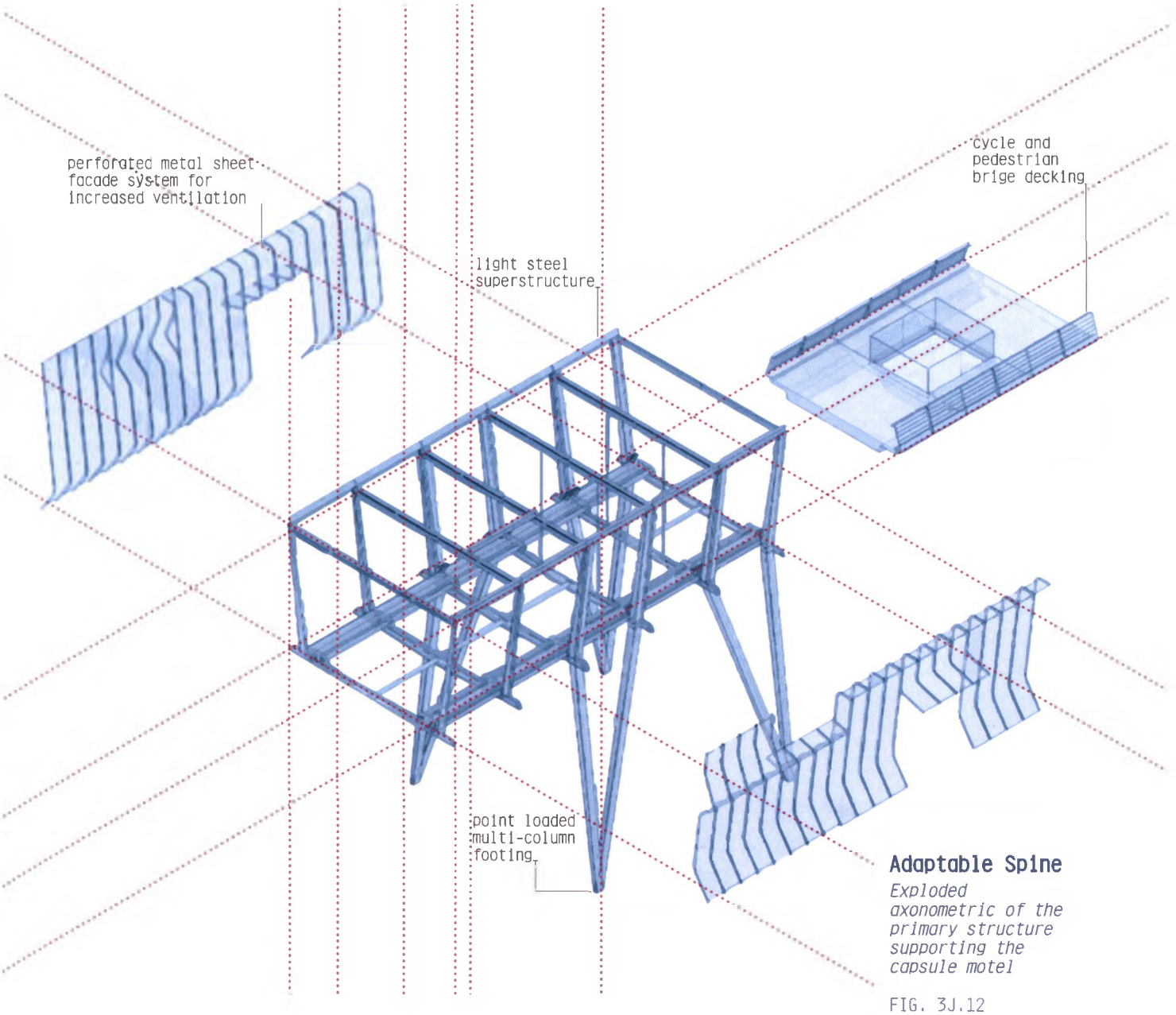
Superimposing Structure

Sketch model of the 10x10m New Road structural grid laid over an aerial of the site

FIG. 3J.11



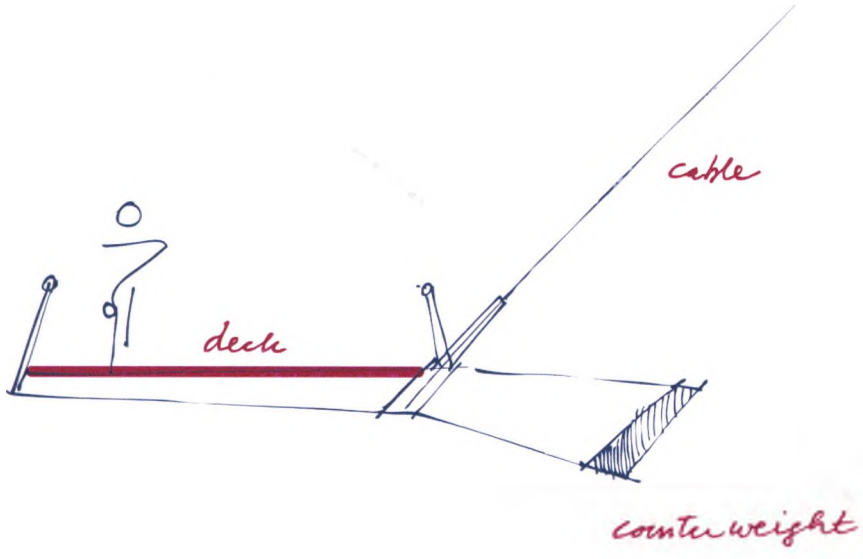




Adaptable Spine

Exploded axonometric of the primary structure supporting the capsule motel

FIG. 3J.12



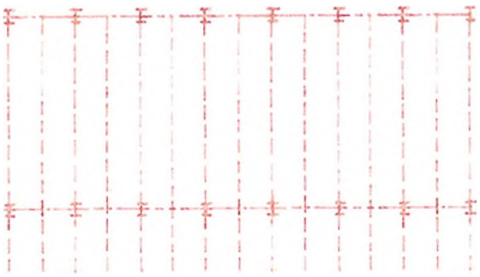
Linear Tension

Structural sketch of the cable stay bridge portion over highway

FIG. 3J.13

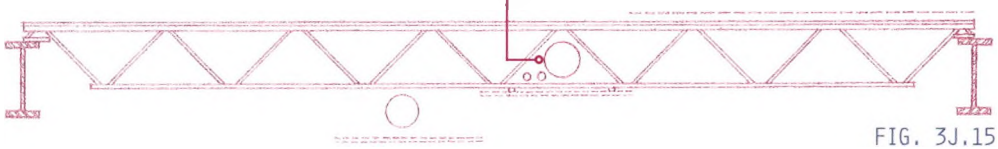
TWO-WAY BEAM SYSTEM

Large, column-free spans are required through various spaces of the concourse. It is for this reason that long-spanning girders are used to carry the primary beams, which in turn support a layer of secondary beams.



OPEN-WEB JOIST FRAMING

This framing system provides direct support for roof & floor slabs, transferring the loads imposed on the deck to the structural frame. The depth varies for each section along the concourse depending on the specific span required. The framing houses a portion of the building's service conduits within its depth.



Permanent Shuttering

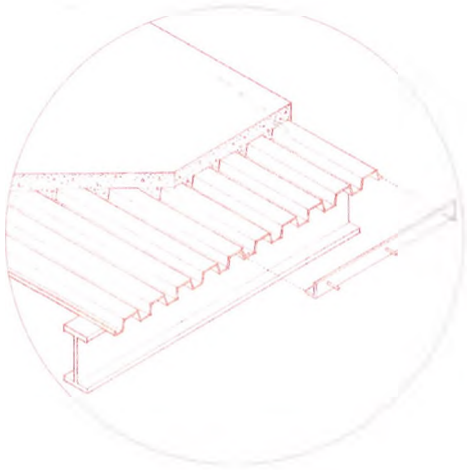
A composite system is conducive to construction above an active arterial

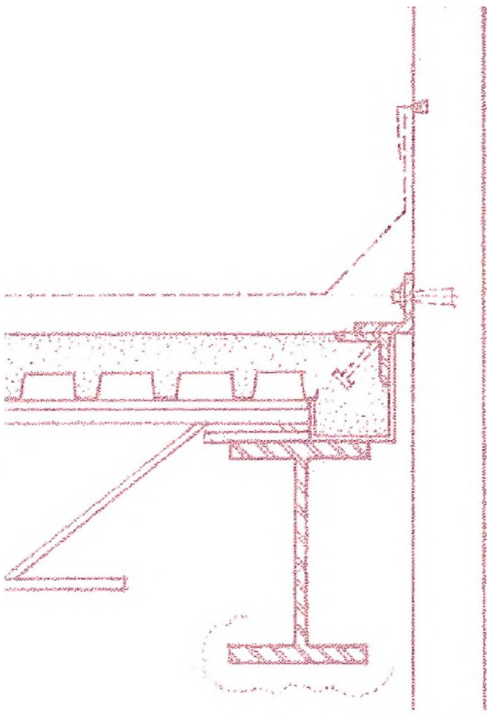
FIG. 3J.14

FIG. 3J.15

RIBBED METAL DECKING

The concourse platform is a composite steel deck floor, consisting of a profiled steel deck with a concrete topping. Included in the concrete is a light welded mesh reinforcement which acts to control cracking, to resist longitudinal shear.





Versatile Structure

The concourse's primary corridor stretches 250m, requiring a consistent, yet adaptable system

FIG. 3J.16

FIG. 3J.17

STRUCTURAL MODULE

In order to support the floor slabs and roof sheeting over the multi-storey sections of the pedestrian concourse while maintaining the 10m grid, diagonal steel members are used as a tensile support for the columns whilst supporting the intermediate girders in compression.

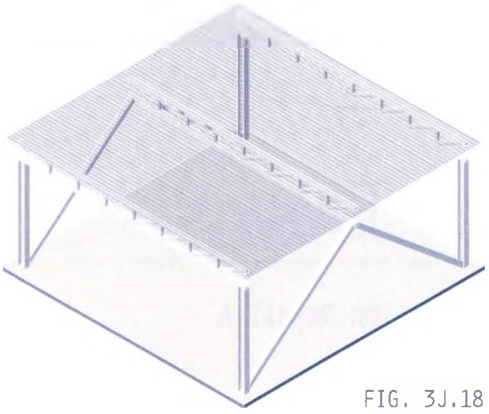
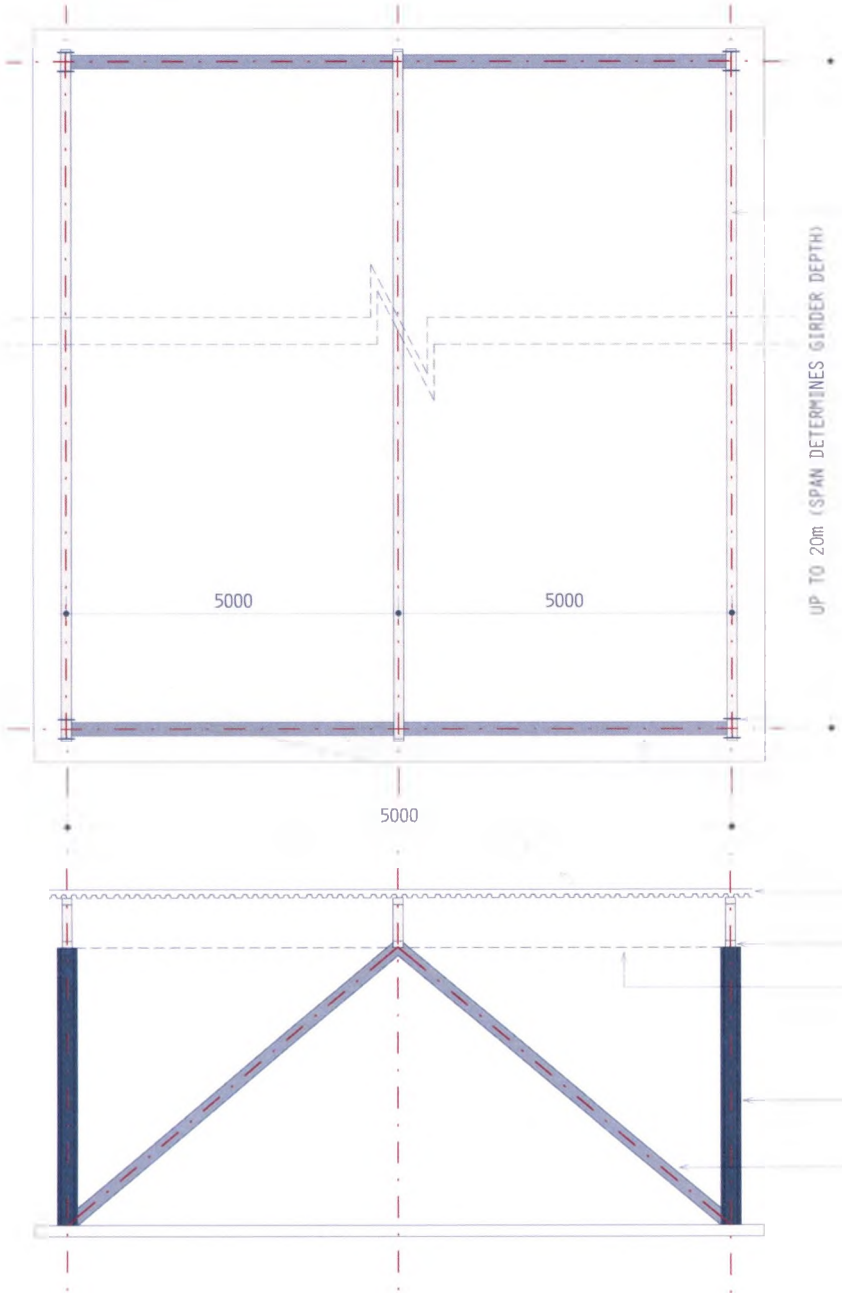


FIG. 3J.18



GIRDER EVERY 5m c/c

COLUMN EVERY 5m c/c

TO OPEN THE SPACE UP FROM COLUMNS, DIAGONAL COLMNS ARE AT 10m C/C & COME DOWN TO THE VERTICAL COLUMNS

ROOF: HULABOND CLADDIING
FLOOR: 65mm CAST-INSITU CONCRETE
BONDEK RIBBED METAL DECKING PROFILE

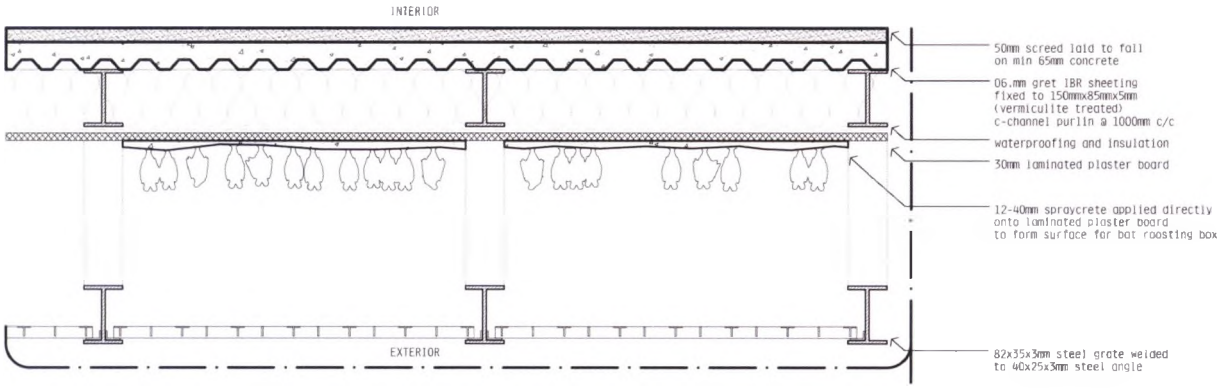
600-900mm DEEP STEEL GIRDER
(DEPENDING ON SPAN LENGTH)

(possible ceiling line)
15mm RHINOBOARD PLASTERED AND PAINTED

300mm x 250mm x 5mm FIRE RESISTANT COATED STEEL BOXED H-COLUMN

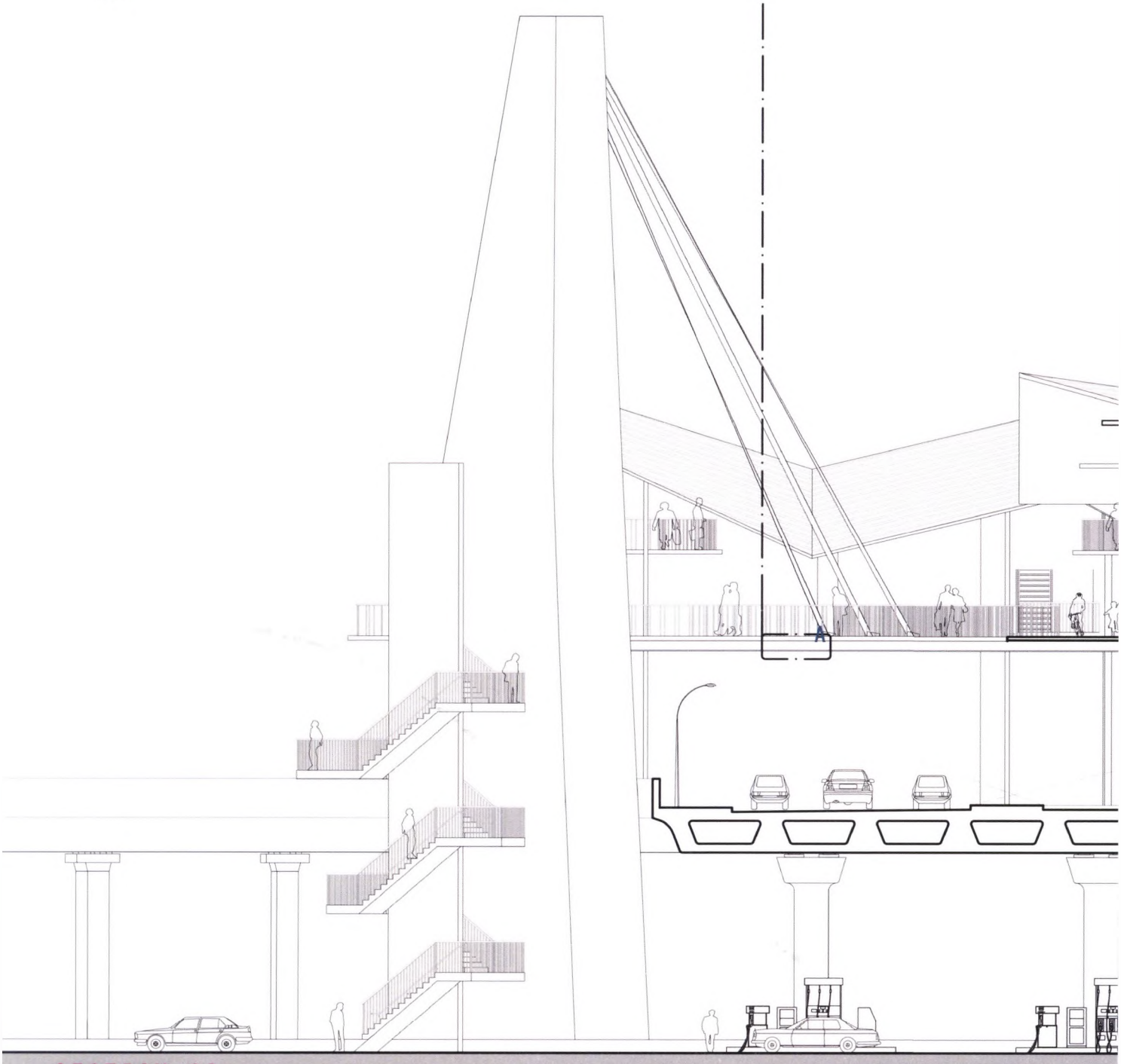
200mm x 200mm x 5mm FIRE RESISTANT COATED DIAGONAL STEEL SHS

FIG. 3J.19



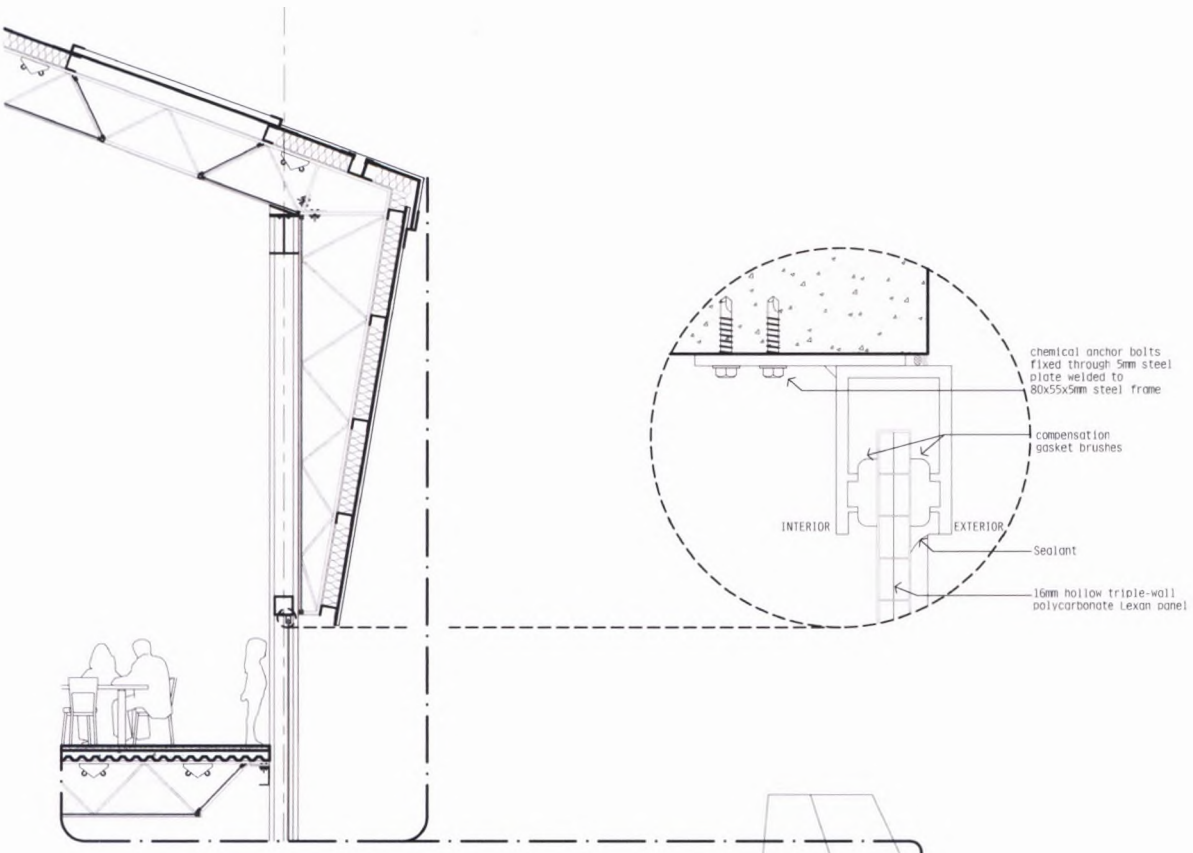
Section Detail A

1:20



SECTION CC

SCALE 1:200



Section Detail B

1:50

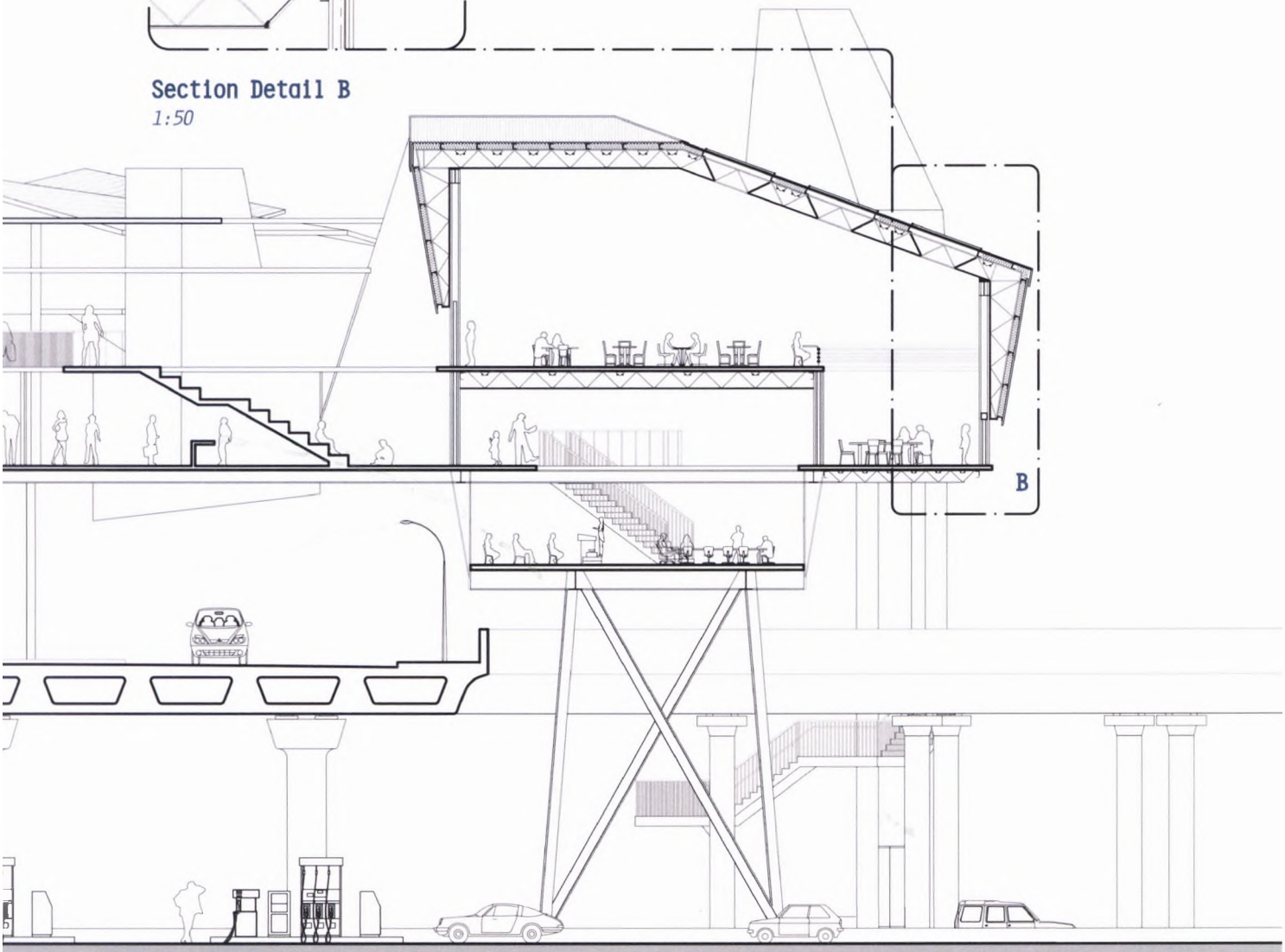
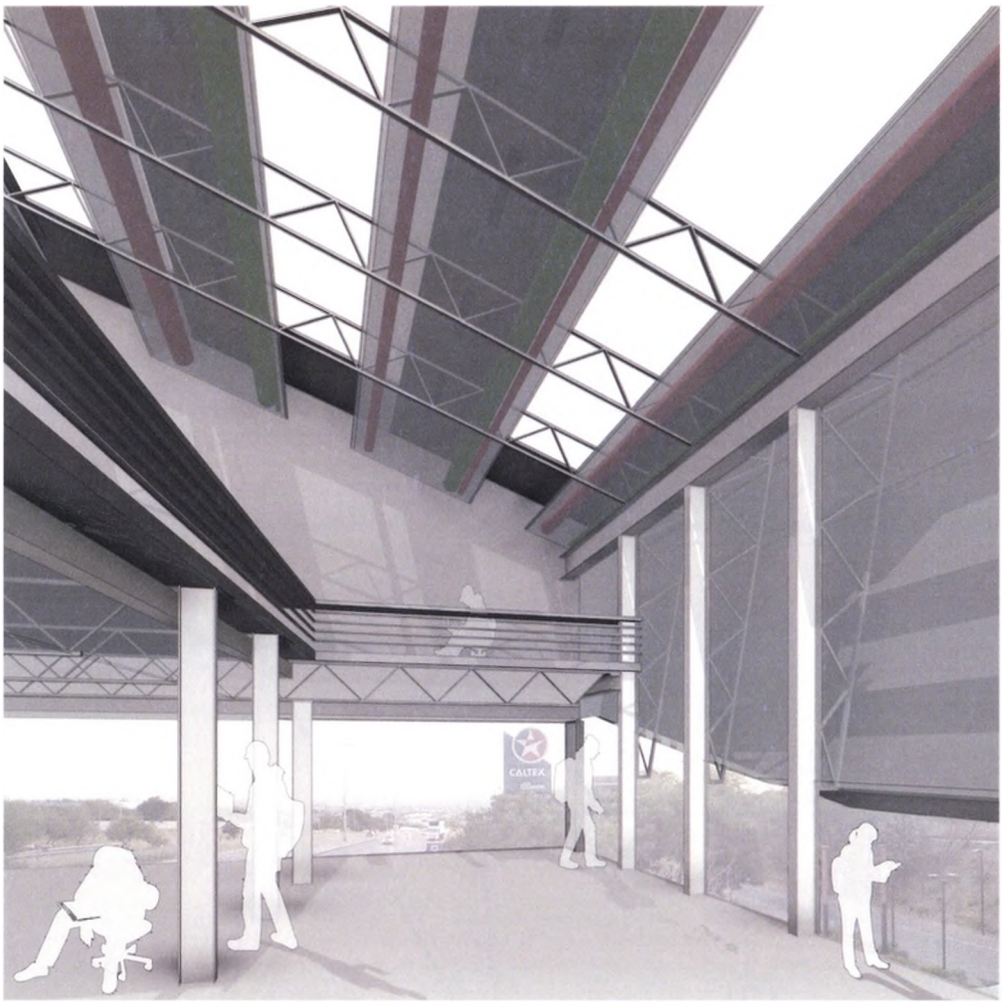


FIG. 3J.20

THE DUALITY OF SPACE & PLACE

Historic Halfway House is characterized by its corrugated structures, which are emblematic of its past. An attempt is made to draw on this language and create a contemporary reading of these materials in their contemporary context. The building is therefore a steel frame structure with sheet metals forming a continuous membrane as walls forming a fluid building envelope. Meshes are also used in floor slabs at significant points for visual connectivity. The visual permeability changes according to the light and security needed at different intervals.

Furthermore, the choice of materiality reflects the duality of architecture which operates within a 24-hour cycle. The northern slope of the digital resource centre is formed by a series of the skylights together with a polycarbonate light box ceiling which carries a portion of the centre's services. Hence the building begins to transform with its use throughout the course of the day.



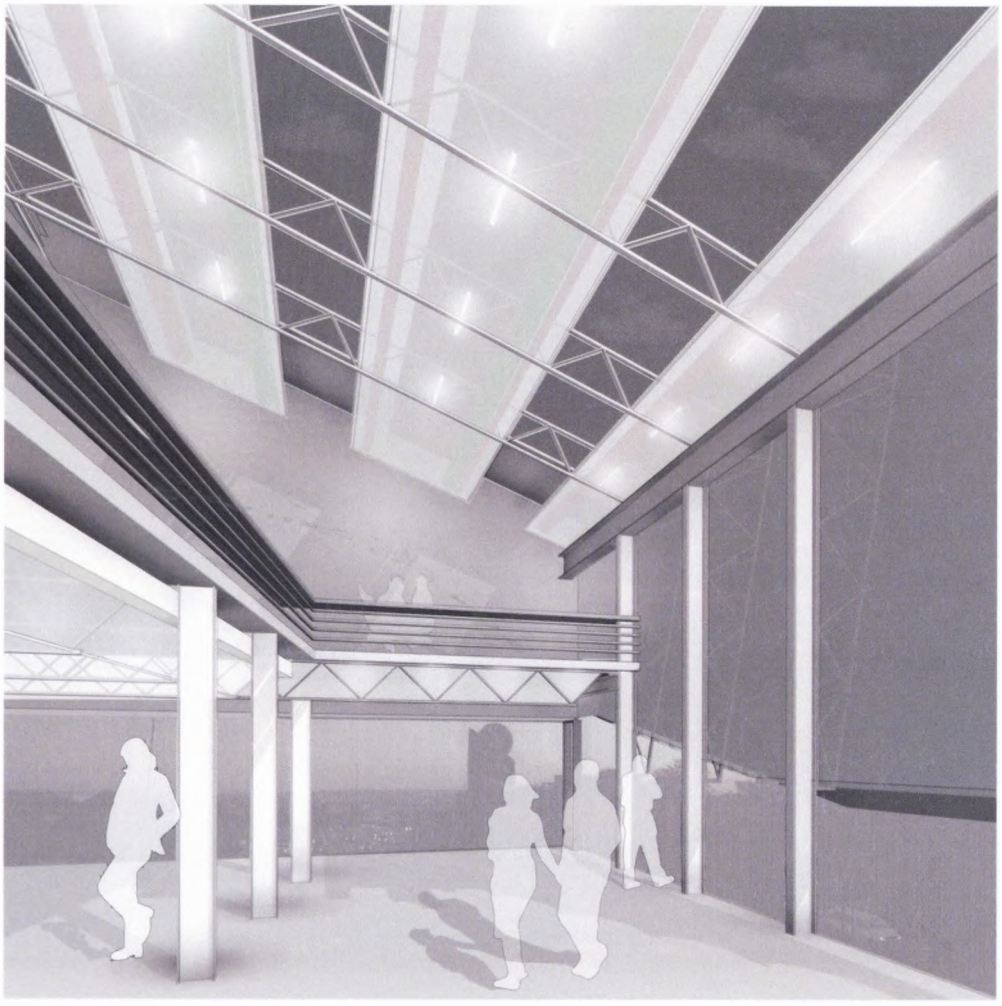
Day Render
Digital Resource Centre as a study facility for youths

FIG. 3J.21

PART K

APPENDIX

FIG. 3K.01



Night Render

Digital Resource Centre as a place for social connection

FIG. 3J.22

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Photograph, Local Butcher.

FIG. 3I.63
Photograph, Resting Trucker.

FIG. 3I.64
Photograph, Moviegoers.

FIG. 3I.65
Photograph, Gautrain Passenger.
FIG. 3I.66
Drawing, Pick-up Tower Perspective.
FIG. 3I.67
Drawing, Trade Ramp Perspective.
FIG. 3I.68
Drawing, Threshold Plan 4/5.
FIG. 3I.69
Drawing, Threshold Plan 5/5.
FIG. 3I.70
Photograph, Postgraduate Researcher.
FIG. 3I.71
Photograph, Intercity Passenger.
FIG. 3I.72
Photograph, Preschool Commuters.
FIG. 3I.73
Photograph, Fruit Vendor.

Technical Development

FIG. 3J.01
Photograph, Grayston Pedestrian Bridge Day Before Collapse.
FIG. 3J.02
Photograph, New Road Parasitic Connectors.
FIG. 3J.03
Photo-essay, Min. Footprint Max. Visibility
FIG. 3J.04
Diagram, 3 Second Conversation.
FIG. 3J.05
Photo-collage, Between Habitat & Highway.
FIG. 3J.06
Illustrations, Visual & Technical Translation.
Resource: Chris Woebken (project architect)
FIG. 3J.07
Diagram, Bat Behaviour.
Resource: Chris Woebken
FIG. 3I.08
Drawing, Retrofitting Existing Technology
Resource: Chris Woebken
FIG. 3J.09
Diagram, Artificial Refuge.
Resource: Chris Woebken
FIG. 3J.10
Render, Detailing an Urban Parasite.
Resource: Chris Woebken
FIG. 3J.11
Mixed Medium, Superimposing Structure.
FIG. 3J.12
Exploded Axonometric, Adaptable Spine.
FIG. 3J.13
Sketch, Linear Tension.
FIG. 3J.14
Drawing, Two-way Beam System.
FIG. 3J.15
Drawing, Open-Web Joist Framing.
FIG. 3J.16
Drawing, Versatile Structure.
FIG. 3J.17
Drawing, Ribbed Metal Decking Detail.
FIG. 3J.18
Drawing, Structural Module Axonometric.
FIG. 3J.19
Drawing, Structural Module Plan and Elevation.
FIG. 3J.20
Drawing, Structural Cross Section and Detail Design.
FIG. 3J.21
Render, The Duality of Space and Place - Day Interior.
FIG. 3J.22
Render, The Duality of Space and Place - Night Interior.